



TOOELE ARMY DEPOT
Tooele, Utah

**Monitoring Well C-42F
Completion Report
Phase II RFI Groundwater
Investigation**

Contract Number: GS-10F-0179J



**US Army Corps
of Engineers®**

Submitted to:
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Sacramento District

December 2005



Prepared by:
PARSONS and **KLEINFELDER**
Salt Lake City, Utah

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TOOELE ARMY DEPOT
TOOELE, UTAH**

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Contract No.: GS-10F-0179J
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TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1. INTRODUCTION	1
1.1 Background Information	1
1.2 Project Purpose and Scope	2
2. DRILLING, SAMPLING, AND LOGGING METHODS	4
2.1 Drilling	4
2.2 Sampling of Drill Cuttings	4
2.3 Record Keeping	5
3. SUMMARY OF SUBSURFACE CONDITIONS	6
3.1 Geologic Log	6
3.2 Geophysical Logs	7
3.3 Hydrostratigraphic Section	8
4. WELL CONSTRUCTION SUMMARY	10
4.1 Construction Techniques and Materials	10
4.2 Surface Completion and Survey Coordinates	10
5. WELL DEVELOPMENT	11
5.1 Swabbing and Bailing	11
5.2 Pumping	11
6. GROUNDWATER SAMPLING	12
6.1 Sampling Methodology	12
6.2 Groundwater Analytical Results	12
7. INSTALLATION RESTORATION WASTE	14
7.1 Decontamination Methods	14
7.2 Disposal of Drill Cuttings	14
7.3 Disposal of Wastewater	14
8. REFERENCES	16

TABLES

- 1 Summary of Laboratory Results

FIGURES

- 1.1 Site Location Map

TABLE OF CONTENTS (continued)

APPENDICES

- A **PERMITTING:**
Excavation Permit, Request and Authorization Letter for Well Construction, Applicant Start Card, Driller Start Card, and Well Driller's Report

- B **FIELD DOCUMENTATION FOR WELL DRILLING AND CONSTRUCTION:**
Daily Field Logs, Field Activity Reports, Health and Safety Briefings, Rig Inspection Logs, and Equipment Calibration Logs

- C **GEOLOGIC AND GEOPHYSICAL DATA:**
Geologic Log, Geophysical Log, Cross Section Location Diagram, and Hydrostratigraphic Cross Section

- D **WELL CONSTRUCTION DATA:**
Well Construction Diagram, Flush Mount Surface Completion Diagram, and Survey Data Report

- E **WELL DEVELOPMENT DOCUMENTATION:**
Well Development Logs and Developer's Daily Logs

- F **GROUNDWATER SAMPLING DOCUMENTATION:**
Groundwater Well Sampler's Daily Logs, Analytical Quality Control Summary, Groundwater Sample Analytical Report with Chain-of-Custody, and Data Review Summary

- G **IRW MANAGEMENT OF SATURATED DRILL CUTTINGS:**
Disposal Recommendation Letter, TEAD Letter of Authorization, Drill Cuttings Sample Analytical Report with Chain-of-Custody

- H **IRW MANAGEMENT OF DEVELOPMENT AND DECONTAMINATION WATER:**
Disposal Recommendation Letter, TEAD Letter of Authorization, and Water Sample Analytical Report with Chain-of-Custody

ABBREVIATIONS AND ACRONYMS

µg/L	micrograms per liter
ASC	Analytical Services Center
ASTM	American Society for Testing Materials
bgs.....	below ground surface
BRAC	Base Realignment and Closure
btoc.....	below top of casing
CTC.....	carbon tetrachloride
DCE.....	dichloroethylene
EPA	Environmental Protection Agency
gpm	gallon per minute
IWL.....	Industrial Wastewater Lagoon
MCL.....	maximum contaminant limit
NAD	North American Datum
NEB	Northeastern Boundary Plume
NGVD	National Geodetic Vertical Datum
NTU	nephelometric turbidity unit
NPL	National Priorities List
PCE	tetrachloroethylene
PDB	passive diffusion bag
PID	photoionization detector
ppm	parts per million
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RFI.....	RCRA Facility Investigation
SWMU	Solid Waste Management Unit
TCA.....	trichloroethane
TCE	trichloroethene
TEAD.....	Tooele Army Depot
UAC	Utah Administrative Code
UID	Utah Industrial Depot
USACE	United States Army Corps of Engineers
USCS	Unified Soil Classification System
VOA.....	volatile organic analysis
VOC.....	volatile organic compound

1. INTRODUCTION

This report contains detailed information regarding the drilling, construction, development, and sampling of groundwater monitoring well C-42F, located within the Base Realignment and Closure (BRAC) parcel on Tooele Army Depot, Utah (TEAD). This report was prepared for the U.S. Army Corps of Engineers (USACE), Sacramento District, under Contract GS-10F-0179J, on behalf of TEAD by Kleinfelder, Inc., (Kleinfelder) and Parsons in Salt Lake City, Utah.

TEAD is an active military facility located approximately 35 miles southwest of Salt Lake City, Utah (Figure 1.1) and it has been in operation since 1942. TEAD has been a primary storage, maintenance, and disposal facility for conventional munitions since its inception. Due to impacts to groundwater quality resulting from this activity, TEAD was added to the National Priorities List (NPL) under the federal Superfund program in October 1990.

1.1 BACKGROUND INFORMATION

Historical wastewater discharges to the unlined Industrial Wastewater Lagoon (IWL) at TEAD resulted in a large impacted groundwater plume beneath the eastern portion of the Depot. A large number of monitoring wells, piezometers, extraction wells, and injection wells have defined a trichloroethene (TCE) plume along downgradient, northern, and western extremes of the Depot. This occurrence of impacted groundwater was designated the Main Plume by previous investigators.

In 1986, TCE was detected in an offsite production well located north of the Industrial Area, approximately 5,000 feet northeast of the IWL. In 1994, well C-10 was installed at the northeastern boundary of the Depot. TCE was detected at a concentration of approximately 240 micrograms per liter ($\mu\text{g/L}$) in groundwater sampled from well C-10, located directly across the road from the impacted offsite production well (Kleinfelder, 1998).

Additional groundwater investigations were conducted to further assess the nature and extent of groundwater contamination at the northeastern boundary of TEAD. These additional investigations indicated that the contamination in well C-10 and the adjacent offsite production well had likely originated from a source different from that attributed to the Main TCE plume. Thus, two plumes of groundwater contamination were indicated. This second, more easterly plume, was designated the Northeastern Boundary (NEB) Plume. The oil-water separator at Building 679 in the former industrial area (now the privately owned Utah Industrial Depot [UID]) was identified as a major source of this plume (Kleinfelder, 2002).

A subsequent investigation was designed to define the approximate offsite extent of the NEB Plume. The plume, which is relatively narrow beneath the former industrial area, extends approximately 16,000 feet downgradient (to the north) from the identified source at Building 679 (Parsons, 2003a). The installation of groundwater monitoring well C-42F was conducted in accordance with the Phase II Resource Conservation and Recovery Act (RCRA) Facility Investigation Solid Waste Management Unit (SWMU) 58 Work Plan (Parsons, 2003b) and Work Plan Sampling and Analysis Plan Addendum 1 (Parsons, 2004) that were approved by the U.S. Army and the State of Utah prior to initiating fieldwork.

1.2 PROJECT PURPOSE AND SCOPE

Monitoring well C-42F is one of eight groundwater monitoring wells installed between September 2004 and January 2005 during the Phase II RFI at SWMU 58. SWMU 58 encompasses the source area and the area impacted by the Main and NEB TCE Plumes. Objectives of the groundwater investigative component of the Phase II RFI are to:

- Refine the vertical limits and lateral extent of the Main and NEB chlorinated solvent plumes;
- Further characterize the distribution of contaminants within the plumes;
- Ascertain whether there are additional contaminant sources to the NEB Plume and assess their impacts to groundwater;
- Assess the risks to human health associated with the unmanaged (offsite) portion of the NEB Plume; and
- Refine the existing numerical groundwater flow and solute transport models with respect to fate and transport, in order to better predict the potential extent (stability) of the plume in the future.

Investigative efforts described in this completion report were supervised by a Kleinfelder State of Utah-registered geologist, who was present for critical on-site activities. Before drilling began, an Excavation Permit was obtained from the UID and a permit for well construction was obtained from the State of Utah Division of Water Rights. Copies of the Excavation Permit, Request and Authorization letters, and the Driller's Start Card are included in Appendix A. Underground utility clearance was obtained through Blue Stakes Location Center and the UID.

Monitoring well C-42F was drilled, constructed, developed and sampled between November 8, 2004, and January 3, 2005. Drilling and construction activities were conducted by Layne Geoconstruction (Layne) of Salt Lake City, Utah. Following completion of the well, Layne submitted a Well Driller's Report, which is included in Appendix A. Well development and groundwater sampling were completed by Veolia Water North American Operating Services, LLC, which operates the groundwater treatment plant at TEAD. Laboratory analyses were

provided by Analytical Services Center (ASC) of Lancaster, New York, a division of Ecology and Environmental, Inc. (E and E), which is a State of Utah and a USACE-validated analytical laboratory. Down-hole geophysical logging was performed by RAS, Inc. of Golden, Colorado.

Monitoring well C-42F is located in the SE ¼ Section 19, T3S, R4W, Salt Lake Base and Meridian within BRAC parcel. The well is situated at the north end of the UID approximately 150 feet west of Lodestone Avenue, the main access route through the industrial park. The primary reasons for the installation of monitoring well C-42F at this site were to better define the centerline of the NEB plume in this area, and secondly, to ascertain if possible, based on the suite and concentrations of VOCs present, if the contamination was derived solely from the oil-water separator at Building 679, or if one or more as yet unidentified contaminant sources at the north end of UID might be contributing to the chlorinated solvent mass in shallow groundwater (Parsons, 2003b).

2. DRILLING, SAMPLING, AND LOGGING METHODS

2.1 DRILLING

Groundwater monitoring well C-42F was drilled by Layne Geoconstruction of Salt Lake City, Utah, between November 8 and November 11, 2004 using a Becker AP-1000 percussion hammer drilling rig manufactured by Drill Systems. The AP-1000 advances a dual-walled 10-inch diameter drill pipe into the subsurface by means of a diesel-powered pile hammer. Circulating air is pumped down the space between the inner and outer walls of the drill rod to the drill bit, where formation cuttings are picked up and carried back through the center of the drill rod and out of the borehole as the air returns to the ground surface. Cuttings are separated from the discharging air by a cyclone. Cuttings are separated from the discharging air by a cyclone. Dry cuttings were collected and spread on the ground around the well site whereas saturated cuttings were contained in 55-gallon drums pending analytical results.

2.2 SAMPLING OF DRILL CUTTINGS

Cuttings were observed continuously as they discharged from the cyclone and were collected in 1-quart bags and chip trays. The cuttings were collected and logged at 5-foot intervals or when significant changes in lithology occurred. Drive sampling in previous boreholes during this program was rarely successful due to refusal in coarse sediments and inability to predict where thin fine-grained layers would occur. Thus, a more accurate and complete borehole log resulted from continuous observation of cuttings from the cyclone.

Drill cuttings were logged using the American Society for Testing Materials (ASTM) Method D2488-00. The Unified Soil Classification System (USCS) was used to describe the unconsolidated material that was encountered. Where a conflict between the two methods was identified, the ASTM convention took precedence. Color of the drill cuttings (when wetted) was noted by referencing the Munsell color chart system. Estimated percentages of fines, sand, and gravel; degree of roundness and lithology/mineralogy of any gravel clasts; moisture content; degree of cementation; and any other notable attributes were routinely recorded in the sample description. The Becker Hammer Drilling method allows for a maximum clast size of about 6 inches to pass through the drill pipe to the surface. While cobbles greater than this dimension, and possibly boulders, may exist over certain intervals, approximate percentages cannot be estimated.

Grab samples of drill cuttings from below the saturated zone were logged and screened for volatile organic compounds (VOCs) using an Environmental Instruments photoionization detector (PID). PID readings were also included on the boring log. PID readings from the grab samples from the C-42F boring ranged from 0.0 to 1.2 parts per million (ppm). A composite of

these samples was submitted for VOC analysis, which was used to determine the proper means of disposal for all saturated cuttings from this borehole. Saturated drill cuttings were containerized in 55-gallon drums and transported to the UID 90-day yard pending analysis.

2.3 RECORD KEEPING

While on site, Kleinfelder's geologist maintained records of all activities in a bound field log book, on Daily Field Report forms, Drill Rig Inspection forms, Safety Meeting Forms, and Equipment Calibration Logs. Copies of these records are presented in Appendix B.

3. SUMMARY OF SUBSURFACE CONDITIONS

3.1 GEOLOGIC LOG

A Kleinfelder geologist was on site during drilling and sediment sampling in order to maintain a continuous geologic log of the subsurface conditions that were encountered. Lithologic descriptions and the geologist's observations were entered onto the geologic log. The geologic log of the cuttings that were sampled during drilling of monitoring well C-42F borehole is included in Appendix C as Plate C-1.

The geologic log indicates that the boring was drilled in unconsolidated valley fill sediments from the ground surface to a total depth of 360 feet below ground surface (bgs). Most of the subsurface sediments were poorly graded sand and gravel with varying amounts of boulders, cobbles, silt, and clay. The coarser-grained sediments (i.e., gravels) are interpreted to have been deposited in a dynamic high-energy depositional environment of coalescing alluvial fans. They are interpreted to represent one or more of several types of alluvial fan deposits, including debris flow, stream channel, sheetflood, and sieve, that have been defined (Collinson, 1978) based on depositional process, location on the fan, deposit morphology, degree of sorting and bedding, etc. The majority of the coarse-grained sediments consisted of sub-rounded to sub-angular clasts of quartzite and limestone that appeared water-worn. While some angular clasts are observed, these are likely products of the mechanical breaking caused by the drilling method.

Horizons of less permeable fine-grained sediments were encountered at depths of 38-40, 85-88, 124-127, 231-233, 244-245, 257-261, and 319-322 feet bgs as indicated on the geologic log. While some of the finer-grained clay- and/or silt-rich sediment occurrences may be of lacustrine or floodplain origin, others may represent debris flows (Collinson, 1978) and/or possibly stream overbank deposits.

The geologic log also indicates that some weak to moderately caliche cemented and strongly cemented zones were also encountered at depths of 98-99, 130-131, 170-171, 174-175, 177-178, 179-180, 233-236, 247-253, 261-264, 308-310, 311-313, 317-319, 332, 334-345, and 354-357 feet bgs. No bedrock was encountered during drilling of monitoring well C-42F.

Free water from the cyclone was first observed at 330 feet bgs during drilling. Depth-to-water was measured at 320.32 feet below top of casing (btoc) by Veolia Water once the well was constructed and developed. Perched water was not encountered during drilling of monitoring well C-42F.

3.2 GEOPHYSICAL LOGS

As a secondary interpretive tool, down-hole geophysical logging of monitoring well C-42F was completed within the polyvinyl chloride (PVC) cased well following construction. Natural gamma ray (gamma) and induction electric (induction) logs were run simultaneously by RAS on December 8, 2004 using a combination gamma ray-induction tool manufactured by Century Geophysical Corporation of Tulsa, Oklahoma. The gamma and induction logs for this well are contained in Appendix C. Data validation was attained via a repeat logging run of a selected stratigraphic interval within the well. On a separate log printout in Appendix C the borehole geology has been added, and an attempt has been made to correlate pronounced gamma and induction electric highs and lows with fine-grained, generally clay-rich units and caliche-cemented zones. The reader should refer to that multipage printout when reviewing the comments presented below concerning the description and interpretation of the geophysical logs.

The gamma logging technique measures the natural gamma emissions emanating from the formation surrounding the borehole. This radiation is released from nuclei of an unstable element decaying to a more stable element. Potassium 40 is the element responsible for most of the gamma radiation detected by the gamma ray probe. This element is very abundant in a number of rock-forming minerals, such as potassium feldspar, that weather to clays. Hence, as the clay content of the sediment increases the gamma ray response also increases. Thorium- and uranium-bearing minerals also produce a gamma ray response, but in most geologic environments, including the unconsolidated valley fill deposits at the project site, the potassium-40 isotope is most abundant. Conversely, the gamma response becomes progressively weaker as the quartz content of the sediment increases. A comparison of this and other monitor well boring logs with their respective gamma ray logs shows a very strong correlation between finer-grained, clay-rich units and gamma ray peaks. Slight offsets between a gamma peak and the location of the fine-grained interval are attributed to an inability to exactly define the depths of unit contacts owing to the time required for the cuttings to travel up the borehole and reach the surface. The measurement scale of the gamma-ray log is in API (American Petroleum Institute) units, accepted as the international reference standard that allows consistent comparisons to be made between a wide variety of gamma-ray counting devices.

The gamma ray response for this well consisted primarily of a fairly narrow range of readings (25 to 40 API units) that characterized the gravel and sand units. Intermittent gamma peaks up to about 75 API units correlate closely with most of the eight relatively thin (≤ 3 ft) clay-rich intervals logged in this boring. Only one significant gamma peak (at about 330 ft) remains unexplained. The absence of a more pronounced response for some of the clay-rich zones may reflect one or more factors including clay mineralogy, e.g., a lack of potassium-bearing clay minerals such as illite.

The induction log measures the conductivity from high frequency alternating currents that are induced into the geologic formation, and is best suited where the formation is characterized by low to medium (less than 50 ohm-meters) resistivity values, the geologic medium exhibits medium to high porosity, and the open borehole was advanced using mud or air as the drilling fluid. Induction logging can be performed in boreholes cased with PVC, but not with steel pipe. Although the induction device measures conductivity, by convention the conductivity readings are converted to a resistivity curve when plotted on a down-hole log via a simple inverse relationship.

Three curves are shown on the induction logs that were run by RAS. They represent the direct conductivity (millimhos/meter) readings as designated by a dashed (“cond”) curve on the plot, a conductivity (“ap-cond”) curve designated by a dotted line that has been corrected for the temperature of the induction probe, and resistivity (ohm-meters) measurements derived from a conversion of the temperature-corrected conductivity readings that are depicted as a solid (“res”) line on the induction log plot. Note that although the conductivity and resistivity curves appear to mimic one another, the scales for the two properties are reversed since their relationship is an inverse one.

The resistivity curve exhibits a number of highs, virtually all of which occur in the coarser-grained sediments. The most pronounced peak at about 340 ft is spatially associated with two zones of caliche cementation, each four to five ft thick. A few other resistivity highs also appear to be a response to caliche cemented zones. Elevated resistivity readings were also associated with at least two zones of limestone boulders (at 20-22 and 154-160 ft). Numerous resistivity peaks within the coarser-grained sediments cannot be explained from the geologic log, but are presumed to be indicative of either caliche cementation, very low moisture content, and/or possibly cobbles and/or small boulders. Low resistivity readings and pronounced conductivity peaks were generated adjacent to clay-rich fine-grained sediment intervals.

In summary, the induction electric and gamma logs appear to reflect the subsurface conditions as interpreted from the drilling response and geologic logging of the drill cuttings.

3.3 HYDROSTRATIGRAPHIC SECTION

To aid in understanding the subsurface geology and water table configuration in the vicinity of this monitoring well boring, the geologic log for this well was projected onto a straight line cross section trending northwest-southeast over a distance of approximately 6,000 feet that is also defined by monitoring wells C-41, C-43F, C-44, and C-45 (Plate C-4). All of the wells except C-41 were projected onto this section. Projection distances are provided on the cross section. The location of this cross section (A – A’) is shown on Plate C-3. Note that only cross section A - A’

is provided in this well completion report, since it is the only section that is partially defined by that monitoring well.

Study of the cross section suggests that the predominantly fine-grained sediment units do not appear to be laterally continuous between the five C-series wells that lie on or have been projected onto Cross Section A–A'. Thus, the correlation of these units from borehole to borehole is poor. This is partially due to the substantial distances between them (up to ½ mile). However, even for boreholes that are relatively close to each other (e.g., C-41 and C-42F are approximately 800 feet apart), little correlation appears to exist between units.

The difficulty in correlating distinct fine-grained units is not surprising, given that the unconsolidated valley fill within SWMU-58 was largely deposited in a dynamic high energy depositional environment of coalescing alluvial fans. Fine-grained units deposited under such conditions are characterized by limited thickness and areal extent, and this also appears to hold true for the project area, in addition to well boring C-42F. Many of the fine-grained silt- and/or clay-rich intervals pinch out over a few hundred ft due to a change in the depositional environment.

Another plausible explanation for limited areal extent is post-depositional erosion and sediment reworking. Channel erosion is strongly suspected of causing the substantial difference in the thickness of a clay-rich lacustrine or floodplain deposit encountered in two closely spaced borings at Building 600 in the Utah Industrial Depot. It almost certainly has been operative elsewhere.

There is another factor that may frustrate correlation of fine-grained units in this and other Phase II RFI groundwater monitoring wells. Most of these fine-grained units, even if they exhibit some lateral extent, were generally deposited on inclined alluvial fan surfaces sloping several degrees or more. Over a distance of just a few hundred feet a dip of even a few degrees translates into a change in elevation of up to ten feet or more. Moreover, for monitoring wells spaced a thousand feet or greater, which is not atypical for the groundwater monitoring array at TEAD, differences in the elevation of a laterally continuous unit could be on the order of several tens of feet.

As per the fine-grained units, little success has been achieved attempting to correlate caliche-cemented zones that occur primarily in the gravels. The same general comments presented above for fine-grained sediment deposits also apply to correlation of cemented zones. The ability to correlate both fine-grained sediment units and cemented zones between monitoring wells in the project area may be contingent upon the quality of the downhole gamma and induction electric logs for those wells.

4. WELL CONSTRUCTION SUMMARY

4.1 CONSTRUCTION TECHNIQUES AND MATERIALS

During drilling of monitoring well C-42F the 10-inch Becker Hammer drive casing was advanced to a depth of approximately 360 feet bgs. Well construction occurred on November 12th and 15th, 2004. Monitoring well C-42F was constructed inside the 360 feet of drive casing and the bottom of the well was tagged at a depth of 360 feet bgs. Two 10-foot sections of threaded, 4-inch diameter Schedule 40 PVC well screen with 0.010-inch wide slots and 34 10-foot sections of 4-inch diameter Schedule 40 PVC blank casing were assembled and lowered inside the drive casing to the bottom of the borehole. The screen extends from 340 feet to 360 feet bgs.

Silica sand (16-40) was added to the annulus between the PVC and the borehole in the interval adjacent to the well screen. To help minimize the risk of bridging and to confirm that the correct volume of sand was added, the sand was poured slowly into the annulus from the surface and continuously monitored until the top of the sand interval was approximately 4 feet above the top of the screen. The sand-pack interval was isolated from upper portions of the borehole with a 6-foot thick seal of bentonite clay pellets. The remaining annulus above the bentonite clay pellets was grouted to approximately 30 inches bgs with 30 percent solids bentonite slurry in accordance with Utah Administrative Code (UAC) R655-4-9.4.2. A well construction diagram is provided in Appendix D.

4.2 SURFACE COMPLETION AND SURVEY COORDINATES

Monitoring well C-42F was built with a flush mount surface completion with the 4-inch PVC well casing inside a 12-inch circular traffic rated well vault. The top of the well casing is 0.43 feet below the ground surface. The “F” designation in the well identifier signifies that the surface completion is flush with rather than above ground. Concrete was used to anchor the well vault and build a 4-foot square by 18-inch thick pad around the finished well. The concrete pad was finished to slope away from the protective casing and was embedded with a brass survey monument. An as-built drawing of the flush mount surface completion is provided in Appendix D.

Ward Engineering Group of Salt Lake City, Utah, surveyed the well on December 10, 2004. Coordinates for the well locations are referenced to the North American Datum (NAD) 1983 Utah State Plane Central Zone and the elevation to the National Geodetic Vertical Datum (NGVD) 1929. Survey data are included in Appendix D. The location of C-42F is marked with a metal paddle sign on a steel post approximately 5 feet tall.

5. WELL DEVELOPMENT

Groundwater monitoring well C-42F was developed using swabbing, bailing, and pumping methods on November 18 and 19, 2004. Development continued for 6 hours and 24 minutes until the turbidity of the water produced was less than five nephelometric turbidity units (NTUs). All development water was collected and contained for later disposal pending analytical results (see Section 7.3). Well development records are included in Appendix E.

5.1 SWABBING AND BAILING

Swabbing and bailing took place for 3 hours and 2 minutes. Swabbing was done with a loose fitting surge block with an oversized rubber disk, slightly smaller than the inner diameter of the screen. Periodic measurements of pH, temperature, electrical conductivity, turbidity, and comments regarding the appearance of discharge water were recorded on well development records (Appendix E). Approximately 105 gallons of water were removed from well C-42F by bailing during development.

5.2 PUMPING

After swabbing and bailing the well, development was completed using an electric submersible pump. The pump was lowered to the bottom of the screened interval and operated intermittently at rates ranging from 7.01 to 7.26 gallons per minute (gpm) for 3 hours and 21 minutes. During development pumping, the pump was periodically shut off and the water in the discharge piping was allowed to back-flush (surge) into the well. Pumping and periodic back-flush surging was continued until there was no noticeable increase in the discharge water turbidity. Periodic measurements of pH, temperature, electrical conductivity, turbidity, and comments regarding the appearance of discharge water were recorded on well development records. 1,092 gallons of groundwater were removed by development pumping. The final turbidity was measured at 1.71 NTU.

6. GROUNDWATER SAMPLING

6.1 SAMPLING METHODOLOGY

Monitoring well C-42F was sampled using passive diffusion bag (PDB) sampling techniques. PDB sampling is performed without purging and involves lowering a polypropylene bag filled with distilled water to a predetermined depth. Once in place, the water within the PDB sampler is allowed to equilibrate with the surrounding groundwater for two weeks. During this time, VOCs diffuse into the distilled water. The PDB sampler is then removed from the well and water is transferred into three pre-preserved 40 mL volatile organic analysis (VOA) vials.

Four PDB samplers were placed in monitoring well C-42F on December 20, 2004. One sampler was placed at a depth of 340 feet btoc, two samplers were placed at a depth of 350 feet btoc, and one sampler was placed at a depth of 360 feet btoc. The PDB samplers were retrieved from well C-42F and sampled on January 3, 2005. Groundwater samples collected from C-42F were assigned sample identifiers C-42FGW001, C-42FGW002, C-42F-MS002, C-42F-SD002, and C-42FGW003. Samples C-42FGW001, C-42FGW002, and C-42FGW003 were submitted to the laboratory for analysis and the other samples were collected as quality control samples.

The groundwater was sampled for analysis of VOCs. After filling, sample containers were placed into ice-chilled coolers and delivered overnight to ASC, a State of Utah and USACE-certified analytical laboratory. Chain-of-custody forms were filled out and used to document the sampling dates, analytical parameters requested, and proper sample handling. Completed chain-of-custody forms and cooler receipt forms are included in Appendix F.

6.2 GROUNDWATER ANALYTICAL RESULTS

Analysis for VOCs was completed using U.S. Environmental Protection Agency (EPA) Method 8260B. Six VOCs [1,1-dichloroethylene (1,1-DCE), TCE, tetrachloroethylene (PCE), 1,1,2-trichloroethane (1,1,2-TCA), carbon tetrachloride (CTC), and chloroform] were detected in groundwater from this well. Five of the compounds were reported for all three sample depths.

The highest VOC detection in the groundwater from C-42F was trichloroethene in a sample taken from 350 feet bgs with a concentration of 1,010 µg/L. TCE results for the other two PDB samples analyzed from this well were very comparable to the aforementioned concentration of 1,010 µg/L, and thus verified the presence of significant dissolved TCE in shallow groundwater at this site. The elevated concentrations reported imply that the well was installed very close to the centerline of the NEB plume. Moreover, the chlorinated solvent signature for this well is very similar to that for impacted groundwater in the immediate vicinity of the oil water separator at Building 679, suggesting that the solvent contamination at C-42F may reflect that source. The

data are insufficient to indicate whether vertical distribution of the detected VOCs shows any stratification. The sampling results from monitoring well C-42F are summarized in Table 1. Laboratory reports for the groundwater analysis from C-42F are included in Appendix F.

TABLE 1
SUMMARY OF LABORATORY RESULTS

TOOELE ARMY DEPOT, UTAH

Analyte	Federal MCL (µg/L) 95 40CFR 141.11, 141.12, 141.61, & 141.62	Analytical Results (µg/L)		
Sample Number & Depth		C-42FGW001 (340 feet)	C-42FGW002 (350 feet)	C-42FGW003 (360 feet)
1,1,1 Trichloroethane	200	ND	ND	ND
1,1,2 Trichloroethane	5	0.544	0.577	0.635
1,1 Dichloroethane	5	ND	ND	ND
1,1 Dichloroethene		0.201	0.203	0.214
1,2 Dichloroethane	5	ND	ND	ND
1,2 Dichloropropane	5	ND	ND	0.097
Benzene	5	ND	ND	ND
Carbon tetrachloride	5	4.24	4.93	4.72
Chloroethane		ND	ND	ND
Chloroform	100	0.829	0.815	0.826
cis 1,2 Dichloroethene		ND	ND	ND
Ethylbenzene	700	ND	ND	ND
m,p Xylene	10,000	ND	ND	ND
Methylene chloride	3	ND	ND	ND
Naphthalene		ND	ND	ND
o Xylene	10,000	ND	ND	ND
Tetrachloroethene		ND	0.165	0.142
Toluene	1,000	ND	ND	ND
trans 1,2 Dichloroethene		ND	ND	ND
Trichloroethene	5	902	1,010	958
Vinyl chloride	2	ND	ND	ND

7. INSTALLATION RESTORATION WASTE

7.1 DECONTAMINATION METHODS

To help minimize the chance that non-dedicated equipment could cross-contaminate groundwater or sediment at C-42F, a rigorous decontamination program was followed. A decontamination station was constructed in the temporary UID RCRA 90-day yard (located south of building 614) that could accommodate the drill rig, drill pipe, and other equipment as needed. Decontamination of equipment was conducted with approved water from TEAD production well WW-3 with a steam cleaner/high-pressure washer. Equipment wash and rinse water was contained in a sump within the decontamination station, pumped to a frac tank labeled as hazardous waste and stored in the UID 90-day yard for later disposal following characterization of the liquid waste stream.

7.2 DISPOSAL OF DRILL CUTTINGS

Sediments from the unsaturated zone were collected below the cyclone in a wheelbarrow and spread evenly on the ground around the well site. Once groundwater was encountered, saturated cuttings were containerized in 55-gallon drums and transported to the UID 90-day yard. A saturated sample was collected every 5 feet and, upon completion of the borehole, these samples were composited to a single sample and submitted for laboratory analysis for VOCs. Lab results indicated VOCs were not detected in the sediments from C-42F. The sediments are currently frozen in the 55-gallon drums. This spring the cuttings will be spread evenly on the ground surface at a suitable on site location. A copy of the laboratory results is included in Appendix G.

7.3 DISPOSAL OF WASTEWATER

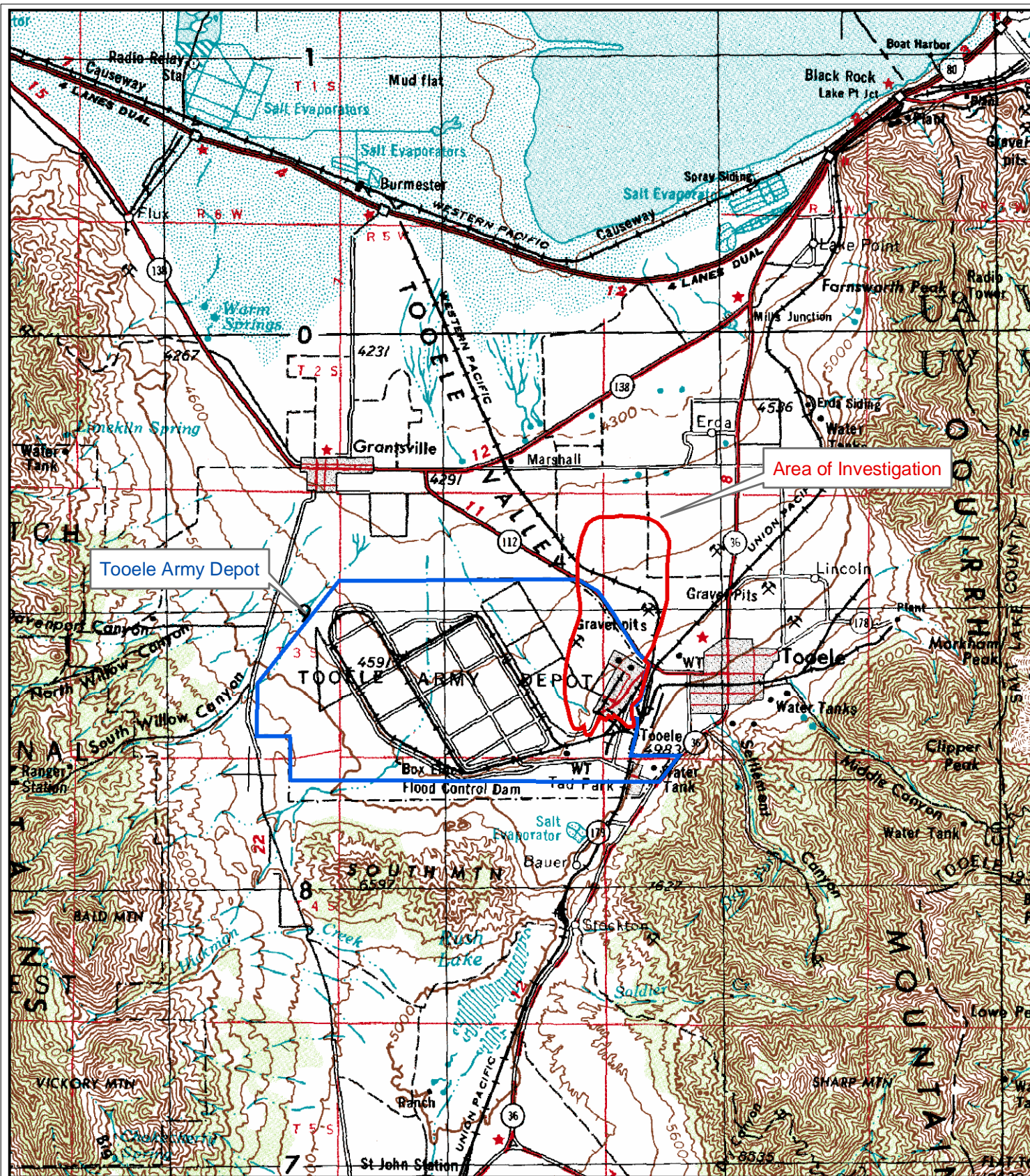
Water derived from the drilling and development of well C-42F, including equipment rinse water, was transported from the well site to the UID temporary 90-day yard by Veolia Water using a 1,000-gallon capacity polytank mounted on a dual axle trailer, and then pumped into a 6,500-gallon capacity Baker tank.

The water was commingled in a 6500-gallon capacity Baker tank with development and equipment rinse water derived from nearby wells C-41, C-43F, and C-44. Commingling of the waste streams from these wells was justified because these four C-series wells lie within the NEB Plume. Consequently, for IRW management purposes it was assumed the development water from these wells would be impacted by chlorinated solvents and have similar waste characteristics. In addition to water from these wells, equipment rinse water generated from deep soil boring I610-VPB001 was added this waste stream.

After development and decontamination water from well C-43F (the last of the four wells drilled) was added to the tank, it was closed and sampled to determine the most suitable disposal option for this waste stream. Sample IDW21 contained 155 µg/L TCE, 1.09 µg/L tetrachloroethylene (PCE), 0.167 µg/L chloroform, and 0.761 µg/L carbon tetrachloride. The waste was coded as F001 and F002 hazardous. Based on this analysis, the water met the requirements for processing at the TEAD GWTP, and this disposal option was recommended to TEAD. A copy of the disposal memo is included in Appendix H. Following authorization by TEAD the waste was transferred to the TEAD groundwater treatment plant on January 5, 2005, via a 6,000-gallon capacity tanker provided by MP Environmental.

8. REFERENCES

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- Kleinfelder. 1998. Northeast Boundary Groundwater Investigation Report of Findings (Vol. I), Tooele Army Depot, Tooele, Utah. Salt Lake City.
- Kleinfelder. 2002. Final Phase I RCRA Facility Investigation Report for SWMU-58 for Tooele Army Depot, Tooele, Utah. Salt Lake City.
- Parsons, 2003a. Final Addendum to Phase I RCRA Facility Investigation Report for SWMU 58: Groundwater Investigation – Offsite Portion of Northeast Boundary Area. Tooele Army Depot, Utah. August.
- Parsons. 2003b. Final Phase II RCRA Facility Investigation SWMU-58 Work Plan for Tooele Army Depot, Tooele, Utah.
- Parsons. 2004. Final Phase II RCRA Facility Investigation SWMU-58 Work Plan, Sampling and Analysis Plan, Addendum 1 for Tooele Army Depot, Tooele, Utah.
- Welenco, 1996. Water and Environmental geophysical Well Logs: Volume 1—Technical Information and Data, 8th edition.



LEGEND

- Installation Boundary
- Investigation Boundary

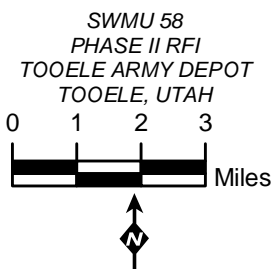
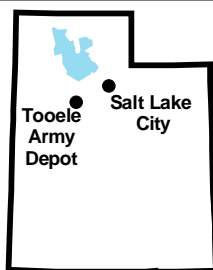


FIGURE 1.1
SITE
LOCATION
MAP

Source: USGS Tooele, Utah 1 x 2 Quadrangle, 1970

APPENDIX A

APPENDIX A
EXCAVATION PERMIT

(Proponent Agency is Installation Support Division)
(TEAD-R 420-16)

EXCAVATION REQUESTED BY Parsons Co. PHONE (801) 572-5999
LOCATION OF EXCAVATION Northeast of Utah Industrial Depot
PURPOSE OF EXCAVATION Environmental Investigation
NAME OF DIRECTOR TO NOTIFY THAT EXCAVATION IS TAKING PLACE IN OR NEAR A
BUILDING OR FACILITY UNDER THEIR RESPONSIBILITY _____
DATE DIRECTOR WAS NOTIFIED _____

NOTIFICATION SHALL BE MADE 24 HOURS IN ADVANCE

BASED UPON DRAWINGS AVAILABLE AND PERSONAL KNOWLEDGE OF THE AREA FOR WHICH I
AM RESPONSIBLE, THE SITE IS FREE OF UNDERGROUND FACILITIES OR SYSTEMS EXCEPT
AS NOTED:

REALITY SPECIALIST-BLDG 501 Dean Drenth 8/5/04
FACILITIES SUPPORT DIVISION-Bldg 516 [Signature]
COMMUNICATIONS CONTRACTOR-Bldg 10 [Signature] 8-5-04
COAXIAL CABLE MANAGER-Bldg 10 [Signature]
ENVIRONMENTAL OFFICE-Bldg 8 Wm D. Denab 8-11-04
SAFETY OFFICE-Bldg 400 N/A

BLUE STAKES Notification Required YES ___ NO V
Confirmation Number _____

(For excavations near natural gas lines call BLUE STAKES 2 days prior to the
excavation (801) 983-1555. This permit is not valid if yes is checked and
the confirmation number is missing.)

INSTALLATION SUPPORT DIV-Bldg 501 [Signature]

NOTE: THIS PERMIT IS TO BE COMPLETED AND ATTACHED TO THE WORK ORDER PRIOR TO
THE WORK ORDER BEING ISSUED.

AFTER HOUR EMERGENCIES? CALL 833-2304 or 833-2015

EXCAVATOR MUST HAVE A VALID PERMIT IN POSSESSION BEFORE/DURING EXCAVATION

SMATE Form 2782-R (Rev) Feb 02
(Previous edition obsolete)

**Call GSTek
(3201/3994) 24 hrs.
Before dig start**

DIVISION OF WATER RIGHTS
REQUEST FOR NON-PRODUCTION WELL CONSTRUCTION
(for wells deeper than 30 feet)

Well Type (check one): Provisional () Monitor (X) Cathodic Protection () Heat Exchange ()

Applicants Name: TOOELE ARMY DEPOT

Mailing Address: SIOTE-EO-EO (BLDG 8)

TOOELE ARMY DEPOT TOOELE, UTAH 84074

Contact Person: MR. LARRY McFARLAND Phone: (435) 833-3504

Proposed Start Date: 08/02/04 Anticipated Completion Date: 12/31/04

Well Drillers License No: 215 Proposed No. of Wells: 10

PROPOSED LOCATION OF WELLS:

County: TOOELE

NO./SQ. DISTANCE (feet)	EAST/WEST DISTANCE (feet)	SECTION CORNER	SECTION	TOWNSHIP	RANGE	BASE	DIAMETER (inches)	DEPTH (feet)
N1000	W1300	W4	15	2S	1W	SL	2	100

Use back of form or additional paper if more room is needed

EXPLANATORY: REFER TO ACCOMPANYING TABLE FOR INFORMATION ON PROPOSED
WELLS.

Signature of Applicant [Signature] [Signature]

Date 7-14-04

FOR OFFICE USE ONLY

Date of Request: _____ Approval Date: _____

Approved by: _____ Provisional/Monitor Well No. _____

Water Right Number (if available): _____

LOCATION DATA FOR PROPOSED GROUNDWATER MONITORING WELLS
UTAH INDUSTRIAL DEPOT, TOOELE, UTAH

Well Identifier	-proposed well location-		-referenced section corner-		-well location relative to section corner-		Section Corner	Section	Township	Range	Base	Diameter (inches)	Depth (feet)
	State Plane (northing)	State Plane (easting)	State Plane (northing)	State Plane (easting)	North/South Distance (feet)	East/West Distance (feet)							
C-41	7364702	1407022	7365112	1409429	South 413	West 2406	NE	30	3S	4W	SL	4	390
C-42	7365715	1406276	7365067	1404092	North 649	East 2187	SW	19	3S	4W	SL	4	355
C-43	7367012	1405984	7365067	1404092	North 1946	East 1863	SW	19	3S	4W	SL	4	320
C-44	7367575	1404058	7365067	1404092	North 2507	West 34	SE	24	3S	5W	SL	4	290
C-45	7370246	1405151	7370371	1404071	South 125	East 1076	NW	19	3S	4W	SL	4	310
C-46	7370246	1405151	7370371	1404071	South 125	East 1076	NW	19	3S	4W	SL	4	550
D-12	7367916	1410001	7370415	1409392	South 1731	East 433	NE	19	3S	4W	SL	4	400
D-13	7371871	1410626	7370415	1409392	North 1456	East 1355	SW	17	3S	4W	SL	4	355
D-14	7374293	1403758	7375579	1404047	South 817	West 256	NE	13	3S	5W	SL	4	240
D-16	7377309	1409136	7375667	1409370	North 1644	West 234	SE	7	3S	4W	SL	4	250



OLENE S. WALKER
Governor
GAYLE F. MCKEACHNIE
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
Division of Water Rights

ROBERT L. MORGAN
Executive Director

JERRY D. OLDS
State Engineer/Division Director

TOOELE ARMY DEPOT
SIOTE-EO-EO (BLDG 8)
TOOELE ARMY DEPOT
TOOELE, UT 84074

July 28, 2004

Dear Applicant:

RE: MONITOR WELL#: 0415004M00

Reference is made to your request to drill 10 MONITOR WELL(S). The anticipated drilling depths will exceed the minimum regulated and reporting depth of 30 feet, thereby requiring permission from the Division of Water Rights to proceed with this project.

The specifications outlined in your well project request dated July 28, 2004, meet the State Engineer's requirements and permission is **HEREBY GRANTED**. Therefore, this letter is your authorization to proceed with the construction of the well(s) in accordance with those specifications and with respect to the following provisions:

- 1) Small diameter casing is to be used in the construction of the well(s) and no more water is to be diverted than is necessary to determine the quality of the ground water by obtaining representative samples as required by the project.
- 2) The well(s) must be drilled by a currently licensed Utah driller and must be drilled in a manner consistent with the recommended construction standards cited in the Utah State Administrative Rules for Well Drillers.
- 3) The enclosed Driller (START) Card form must be given to the licensed driller for his submittal prior to commencing well construction. The other enclosed form is the 'Applicant Card.' It is **YOUR RESPONSIBILITY** to sign and return this Applicant Card form to our office upon well completion.
- 4) If complete information is not available in the initial application, it is the **APPLICANT'S RESPONSIBILITY** to provide, upon completion, descriptive locations of the wells referenced by course and distance from established section corners, e.g. North 565 feet and West 1096 feet from the SE corner of Section 35, T2S, R5W, SLB&M.
- 5) At such time as the well(s) are no longer utilized to monitor ground water and the intent of the project is terminated, the well(s) must be temporarily or permanently abandoned in a manner consistent with the Administrative Rules.

NOTE: Please be aware that your permission to proceed with the drilling under this authorization expires January 28, 2005.

Sincerely,

John Mann, P.E.
John Mann, P.E.

Regional Engineer
1394 West North Temple, Suite 220, PO Box 146300, Salt Lake City, UT 84114-6300
telephone (801) 538-7240 • facsimile (801) 538-7467 • www.waterrights.utah.gov

Utah!
Where ideas connect™

APPLICANT CARD for Monitor WELL#: 0415004M00

IMPORTANT: THIS CARD MUST BE COMPLETED, SIGNED AND RETURNED BY THE WELL
OWNER/APPLICANT AS SOON AS THE WELL IS DRILLED BY A LICENSED UTAH WATER
WELL DRILLER.

OWNER/APPLICANT NAME: TOOELE ARMY DEPOT

MAILING ADDRESS: SIOTE-EO-EO (BLDG 8), TOOELE ARMY DEPOT, TOOELE, UT 84074

PHONE NUMBER: 435-833-3504

WELL LOCATION: You are authorized to drill 10 Monitor Wells. SEE BELOW.

WELL UTM COORDINATES:

WELL ACTIVITY: NEW ☒ REPAIR () REPLACE () ABANDON ()
CLEAN () DEEPEN ()

WELL COMPLETION DATE: _____

NAME OF DRILLING COMPANY/LICENSEE: _____

Owner/Applicant Signature

Date

***COMPLETE, SIGN AND RETURN THIS PORTION UPON FINAL WELL COMPLETION -
DO NOT GIVE THIS CARD TO LICENSED WELL DRILLER - YOU MUST RETURN IT.

STATE OF UTAH DIVISION OF WATER RIGHTS Phone No. 801-538-7416

Fax No. 801-538-7467

COMMENTS: _____

MONITOR WELL LOCATIONS:

- (1) N 1644 W 234 from the SE corner, S07 T 3S R 4W SLBM
- (2) N 1456 E 1355 from the SW corner, S17 T 3S R 4W SLBM
- (3) N 649 E 2187 from the SW corner, S19 T 3S R 4W SLBM
- (4) N 1946 E 1863 from the SW corner, S19 T 3S R 4W SLBM
- (5) S 1731 E 433 from the NE corner, S19 T 3S R 4W SLBM
- (6) S 125 E 1076 from the NW corner, S19 T 3S R 4W SLBM
- (7) S 125 E 1076 from the NW corner, S19 T 3S R 4W SLBM
- (8) S 413 W 2406 from the NE corner, S30 T 3S R 4W SLBM
- (9) S 817 W 256 from the NE corner, S13 T 3S R 5W SLBM
- (10) N 2507 W 34 from the SE corner, S24 T 3S R 5W SLBM

AUG

DRILLER (START) CARD for Monitor WELL#: 0415004M00

IMPORTANT: THIS CARD MUST BE RECEIVED BY THE DIVISION OF WATER RIGHTS PRIOR TO THE BEGINNING OF WELL CONSTRUCTION -- REQUIRED ONLY FOR WELLS DEEPER THAN 30 FT.

OWNER/APPLICANT NAME: TOOELE ARMY DEPOT

MAILING ADDRESS: SIOTE-EO-EO (BLDG 8), TOOELE ARMY DEPOT, TOOELE, UT 84074

PHONE NUMBER: 435-833-3504

WELL LOCATION: You are authorized to drill 10 Monitor Wells. SEE BELOW.

WELL UTM COORDINATES:

WELL ACTIVITY: NEW ☒ REPAIR () REPLACE () ABANDON ()
CLEAN () DEEPEN ()

PROPOSED START DATE: 9-1-04

PROJECTED COMPLETION DATE: 8-1-05

LICENSE #: 626 LICENSEE/COMPANY: Layne Christensen Co.
58 8-29-04

Licensee Signature

Date

NOTICE TO APPLICANT: THIS CARD IS TO BE GIVEN TO A LICENSED UTAH WATER WELL DRILLER FOR HIS SUBMITTAL PRIOR TO WELL CONSTRUCTION.

STATE OF UTAH DIVISION OF WATER RIGHTS Phone No. 801-538-7416

Fax No. 801-538-7467

MONITOR WELL LOCATIONS:

- (1) N 1644 W 234 from the SE corner, S07 T 3S R 4W SLBM
- (2) N 1456 E 1355 from the SW corner, S17 T 3S R 4W SLBM
- (3) N 649 E 2187 from the SW corner, S19 T 3S R 4W SLBM
- (4) N 1946 E 1863 from the SW corner, S19 T 3S R 4W SLBM
- (5) S 1731 E 433 from the NE corner, S19 T 3S R 4W SLBM
- (6) S 125 E 1076 from the NW corner, S19 T 3S R 4W SLBM
- (7) S 125 E 1076 from the NW corner, S19 T 3S R 4W SLBM
- (8) S 413 W 2406 from the NE corner, S30 T 3S R 4W SLBM
- (9) S 817 W 256 from the NE corner, S13 T 3S R 5W SLBM
- (10) N 2507 W 34 from the SE corner, S24 T 3S R 5W SLBM

T-458 P. 12/22 F-299

WELL DRILLER'S REPORT

State of Utah

Division of Water Rights

For additional space, use "Additional Well Data Form" and attach

Well Identification

Non-Production Well: 0415004M00

WIN: 30267

Owner

Note any changes

TOOELE ARMY DEPOT
SIOTE-EO-EO (BLDG 8)
TOOELE ARMY DEPOT
TOOELE, UT 84074

Contact Person/Engineer: Richard Jirik / Parsons

Well Location

Nois any changes

N 649 E 2187 from the SW corner of section 19, Township 3S, Range 4W, SL B&M

Location Description: (address, proximity to buildings, landmarks, ground elevation, local well #) C-42

Drillers Activity

Start Date: 09/01/04

Completion Date: 01/14/05

Check all that apply: ☒ New ☐ Repair ☐ Deepen ☐ Clean ☐ Replace ☐ Public Name of Use: Monitor Well

If a replacement well, provide location of new well. N/A feet north/south and N/A feet east/west of the existing well.

DEPTH (feet) FROM TO		BOREHOLE DIAMETER (in)	DRILLING METHOD	DRILLING FLUID
0	360	9	Percussion Hammer	N/A

Well Log

[illegible]

Static Water Level

Date 11/11/04 Water Level 335 feet Flowing? ☐ Yes ☒ No

Method of Water Level Measurement	WLI	If Flowing, Capped Pressure	N/A	PSI
-----------------------------------	-----	-----------------------------	-----	-----

Point to Which Water Level Measurement was Referenced Ground Level Elevation N/A

Height of Water Level reference point above ground surface N/A feet Temperature N/A degrees ☐ C ☐ F

Well Log

Construction Information

DEPTH (feet)		CASING			DEPTH (feet)		<input checked="" type="checkbox"/> SCREEN <input type="checkbox"/> PERFORATIONS <input type="checkbox"/> OPEN BOTTOM		
FROM	TO	CASING TYPE AND MATERIAL/GRADE	WALL THICK (in)	NOMINAL DIAM. (in)	FROM	TO	SCREEN SLOT SIZE OR PERF SIZE (in)	SCREEN DIAM. OR PERF LENGTH (in)	SCREEN TYPE OR NUMBER PERF (per round/interval)
0	340	4" Sch. 40 PVC	40	4	340	360	.010	4	Factory Slot

Well Head Configuration: Flush MountAccess Port Provided? ☒ Yes ☐ NoCasing Joint Type: Flush ThreadPerforator Used: N/AWas a Surface Seal Installed? ☒ Yes ☐ NoDepth of Surface Seal: 337 feetDrive Shoe? ☒ Yes ☐ NoSurface Seal Material Placement Method: Tremie Bentonite Pellets and Bentonite Grout

DEPTH (feet)		SURFACE SEAL / INTERVAL SEAL / FILTER PACK / PACKER INFORMATION		
FROM	TO	SEAL MATERIAL, FILTER PACK and PACKER TYPE and DESCRIPTION	Quantity of Material Used (if applicable)	GROUT DENSITY (lbs./gal., # bag mix, gal./sack etc.)
0	331	Bentonite Grout	89 Bags	50 lbs each
331	337	Bentonite Pellets	2 Buckets	50 lbs each
337	360	16-40 Silica Sand	20 Bags	50 lbs each

Well Development and Well Yield Test Information

DATE	METHOD	YIELD	Units Check One		DRAWDOWN (ft)	TIME PUMPED (hrs & min)
			GPM	CFS		
	N/A					

Pump (Permanent)

Pump Description: N/A

Horsepower: _____ Pump Intake Depth: _____ feet

Approximate Maximum Pumping Rate: _____

Well Disinfected upon Completion? ☐ Yes ☐ No

Comments

Description of construction activity, additional materials used, problems encountered, extraordinary circumstances, abandonment procedures. Use additional well data form for more space.

N/A

Well Driller Statement

This well was drilled and constructed under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge and belief.

Name LAYNE CHRISTENSEN COMPANYLicense No. 626

Signature _____

(Licensed Well Driller)

Date February 4, 2005

APPENDIX B

Monday 11/8/04

weather: overcast (40°)

light rain wind 5-10 to N

- 7:20 I arrive at site of C-42 Crew has rig over hole and are fueling vehicles & compressor
- 7:40 We have H&S
- 7:55 I do rig inspection
- 8:10 Carl Cole onsite. I set up exclusion zone
- 8:20 Don Yea (UID) onsite
- 8:30 Richard calls Tom and says to hold off until he arrives. I go to 614 to get bags and chip trays. Richard and Kurt are there
- 8:40 Back at site Richard has not arrived so Tom sets up to begin drilling. I call Ron of "outback shack" to let him know the location of the outhouse trailer
- 8:52 Upon trying to air up rig Tom realizes the power steering hose has rubbed a hole in it and he is unable to pressure up the rig. Crew effects repairs.
- 9:05 Richard Ivorik onsite. He says repair may take an hour so I may be able to go back to 614 to use the computer to work on well reports
- 9:15 Back at 614. Greg Calvert is using the computer I make copies of last weeks Drillers Daily's and attach them to file copies of my Daily's last week & put originals back in files. I head to C-41 to put table on surface casing.
- 10:15 Hose is replaced Crew again tries to start C-42
- 10:25 Begin Drilling
- 10:39 Crew replaces exhaust filter @ 10'
- 10:47 Drilling
- 10:48 Hose plugs at head @ 11'
- 11:07 Drilling
- 13:18 @ 118' fuel line breaks, head is very hot, I run to 614 for some H&S form copies
- 14:15 It appears the bolts holding the injector to head has stripped out Crew procured a new bolt and tapped out old one

11/8/04 (cont)

but are still having problems getting the new bolts to tighten

14:38 ~~14:34~~ Drilling again @ 118'

15:05 @ 127 the exhaust hose plugged at the cyclone on a clay layer

15:53 @ 138 the upper funnel on the fuel line breaks
Carl Cole onsite

16:20 Injection bolts won't stay tight.

16:40 @ 139 crew stops drilling to tighten injection bolts - stop drilling for today

16:45 Crew fuels rig while Tom works on Dailey drilling report.

16:55 I return to 614 to make file copies
Crew offsite

15:20 I leave 614

Matthew
11/8/04

Tuesday 11/9/04

weather: overcast (~40°) NW WIND

7:10 I arrive at C-42

7:20 Tom and Dave arrive. Nate called in sick. Tom says

7:25 We have H&S tailgate while Dave fuels rig.

7:40 I do rig inspection.

7:45 Nate is delivered to site by Randy Smith. Tom lies to me I do H&S tailgate with Nate. Tom is attaching a bracket with a rubber grommet around fuel line to the hammer casing to minimize vibration and hopefully keep fuel line from cracking so often. I go to C-41 where Viola is developing well today

7:58 Begin Drilling at 139'

9:14 @ 158 more problems with fuel line. It is leaking where it attaches to injector. Farnel won't seal properly. I run back to C-41. Jeff Bigelow is also at C-41 as his drill rig is also having some problems. Jeff Hammer (Viola) was able to get ^{bailor} pumps to well bottom without incident

10:10 @ C-42 drilling again Jeff Bigelow stops by. I will run drawdown test at C-41 for him if he is not available when the time comes.

10:52 @ 172" the last fuel line inside cracks. Crew calls shop for more. I go to 614 to work on completion reports

13:15 I go to rig at C-42 because Tom calls & says they are ready to roll

13:21 Begin Drilling again

13:44 Between rods I drive to C-41 and give Jeff Hammer a drawdown data sheet for pumping test at C-41. He will record drawdowns and recovery in 1, 2, 5, 10 & 15 minute intervals

13:48 Back at C-42

14:14 Greg Calvert onsite to witness Becker Hammer

14:50 Bolt that holds injector to head breaks off in head @ 223' Crew must tap it out. I drive to C-41. Viola has no trouble getting pump down hole and very little drawdown while pumping. Also very low turbidity

15:21 Drilling again

15:30 Crew mobs 2nd rods truck into place

11/9/04 (cont)

- 15:39 Begin drilling @ 230'
16:01 @ 241 Carl Cole onsite
16:36 Quit drilling @ 249'. Carl leaves site. Viola comes to get 90-Day key to unload Development water into Baker Tank at 90-Day yard.
16:45 Tom Kern does Drillers Daily report. I go to 90 Day to check Viola. Jeff Bigelow is at 90 Day. I return to C-42 to sign Bailey
17:00 I go to Building 614 to make file copies
17:38 I leave UID

Walt
11/9/04

Wednesday 10/4

weather: overcast (wz)

10-20 mph wind to north

- 7:10 I arrive at C-42 onsite. I go to building 614 for supplies
- 7:30 Back at C-42
- 7:45 Crew arrives. They had to load up this morning. They fuel heads. I do rig inspection
- 7:55 We have HSS tailgate
- 8:21 Begin Drilling at 249'
- 9:20 Jeff Haumann (Viola) calls from C-41 where he is concluding development of the well by pumping. He is ready for me to witness that his final parameters are stable and that turbidity has stayed below 5 NTU so I walk over and do so. (Last NTU reading is)
- 9:50 Jeff Bigelow calls to say that Ward Engineering will be out tomorrow to survey in D-12, D-13, D-16 and C-41 and I will need to provide keys and location information to them because Richard, Jeff and Greg will be off. They are working 10 on 4 off shifts as the sonic drillers are from out of state.
- 11:50 @ 294' Jeff Bigelow stops by with key to D-16 for survey crew tomorrow
- 12:07 Fuel line has again failed. Carl Cole onsite. I run to town for food
- 12:24 Back at site. Fuel line is fixed but it fails again immediately. Crew has to have someone bring another out from Layne shop. I go to put locking heads on C-41 and get lock from 614
- 13:40 Back at C-42. Bob Lettmer (Layne) is onsite with new part. Crew is installing new line
- 14:36 Rig is running... for now
- 15:10 @ 306 Carl Cole is onsite
- 15:26 @ 310 Crew must again repair fuel line
- 15:44 Drilling again
- 16:23 @ 318 Carl Cole off site...
- 16:59 @ 320, Tom cleans up and does daily report

11/10/04

17:25 I sign Daileys and head to 614 for file copying
and to unload soils.

17:40 Leave ULD

Walt Hays

Thursday 11/11/04

weather: partly cloudy (~45°)

no wind

- 7:15 I arrive at C-42. No crew onsite. They are loading well construction materials so they may be delayed. I go to 614 for PID & cooler.
- 7:45 I calibrate PID (103.4 on 100 ppm isobutylene).
- 8:10 Crew arrives. They fuel compressor and Dave heads to town for another load for the rig.
- 8:20 I do Rig inspection. Tom is greasing rig & checking fluids.
- 8:34 Jerry Newman (Layne) onsite. He has come for the auger rig that the crew used to dig borrow holes at C-41. Nate and I run him to the 90 Day yard.
- 8:50 Back at C-42 we have H&S tailgate.
- 9:02 Day fuels rig.
- 9:20 Begin drilling at 320'.
- 10:25 As we begin to pound the 330 to 340' rod the first sign of free water is generated at the cyclo. We shut down and set up secondary containment and lab drums.
- 10:40 Carl Cole onsite.
- 11:01 @ 334 fuel line breaks. Shut down to repair.
- 12:15 Try to drill again. Tom replaced injector.
- 12:50 Fuel line breaks.
- 13:25 Drill again @ 336. Tom added a third washer.
- 13:54 @ 342 fuel line fails again.
- 14:09 Drilling again.
- 14:39 @ 350 we take a water level = 322.4 and rising. We assume we will need to drill at least an additional 10 feet to 360 so we add rod and change drums. We have produced over 500 gallons of water during this slow drilling of the saturated zone so rather than drum all this water and later pump it to the Baker Tank we consider applying a haz waste label to our water truck (capacity 1000 gal) and transporting it that way. It has a large opening at the

11/10/04 (cont)

top and could be easily recovered following transfer to Baker Tank. I call Richard and Jeff for an O.K. Both are in agreement. Dave & Nate set up and pump while Tom continues to drill

15:16 360' bgs. Tom removes head and takes another water level - 318.9 ft bgs and steady. I O.K. this as total depth with Carl Cole. We call Gary Porter to arrange to pick up water for grouting well tomorrow only to realize this is Veterans Day and TEAD employees are off. Tomorrow is Friday and TEAD employees don't work Fridays so we are in a jam. I call Richard Jurik with this news. He is making some calls to arrange other options.

15:50 We drive drum truck and water truck and lock in the 90 Day yard. Will unload tomorrow

16:20 Back at C-42 I have Tom lower head over casing to secure the well over night. Tom prepares Driller's Daily report

16:36 I sign Daily and check out with Richard on water Procurement. He has been unable to contact any one. I go to building 614 for file copying

17:46 I leave site

~~W. H. Jones 11/11/04~~

11/12/04 Friday

Weather: rain (40°) nowing

- 7:05 I arrive at C-42. No one onsite. I drive to 614 and unload PID, SAMPLES.
- 7:28 I call Tom to get their ETA but no answer. I go wait at C-42 and pick up debris.
- 7:45 Crew arrives. It is raining hard. We have H&S.
- 8:03 We go to 90-Day yard to unload drums and transfer water from truck to Baker Tank.
- 8:10 Drums being unloaded are PARSN20431501 thru 05 (very little soil in 05) I inspect Drum Truck. Dave and Tom set up pump to transfer water into the tall black cylindrical tank.
- 8:50 Tank is empty so we steam clean the inside and pump this water into tank as well.
- 9:05 All hands back to C-42. We take a water level 318.95 bgs. Crew sets up to build well.
- 9:25 Crew screws a 6" ^{long} end cap to 20' of schedule 40 0.010 slot 4" Diameter PVC Screen.
- 9:42 Crew begins adding 10' long Schedule 40 - 4" diameter PVC casing sections.
- 10:26 240' of blank casing w. hole. Crew touches bottom with well and then lifts slightly so that well is in suspension and well remain straight as sand and gravel are added. Randy Smith (Layne) is on sight. He is trading us compressors as he needs more air pressure. He is taking our Sulair 900 and giving us an Ingersoll Rand 1300 which will provide more volume though less pressure.
- 10:50 Crew is prepared to begin adding sandpack to well annulus.
- 11:53 Crew has sandpack well to 336.5' using 20-50 lb bags of Colorado silica. Volume calculation: as per page 48 one linear foot of borehole annulus (9" hole / 4" well) is 0.35 ft^3 . From 360 to 336.5 is 23.5 ft. $23.5 \times 0.35 = 8.22 \text{ ft}^3$. Each bag is $\sim 0.5 \text{ ft}^3$ so the space should have taken 16.4 bags. While the bit is 9" or the final bore is likely larger in areas where cobble were evacuated.

11/12/04 (CONT)

explaining the discrepancy of 3 bags. It is when the annulus take less than expected that would be cause for concern.

12:05 Richard Jurik calls for an update

12:50 Crew has placed $2\frac{1}{2}$ 50lb buckets of Celco coated Bedouide Pellets down annulus but they have bridged 8 feet up from bit in casing. Tom tries to hammer pellets got with no luck. We hook up air as ^{normal} reverse circulation so it goes down outer ^{WI} tube and up inner tube and pushes a 8" plug up and out of the top pipe. Tom lifts head removes plug and sounds top of seal at 330.4 feet. This is 6 foot of seal and well under water so no need to hydrate ($125 \text{ lbs} / 28.25 \text{ lbs/ft} = 4.4 \text{ ft}$)

13:30 Because it is ~~not~~ not possible to get water for grouting crew is leaving site till Monday. I go to 614 to Fax Richard copies of forms

14:05 Unable to Fax form here. I am going to Klenzler's office to do same

⁹ _{ft} calculated volume is 1.7 feet less than actual space filled so saving gravel has mixed with pel

Walt (cont) 11/12/04

11/15/04 Monday

weather: overcast (~35°) no wind

- 7:15 Arrive at site. No crew onsite yet. Jeff Bigelow calls with IRW issues.
- 7:50 Crew onsite. They fuel rig. I call Gary Parker for a water well 3 appointment. He says 15 minutes. I go to 614 where Richard needs my logbook to backcheck Layve invoices.
- 8:04 Arrive at 614 and copy my logbook for Richard.
- 8:15 Arrive at Water Well 3. Nate follows me to fill water truck. Tom and Dave follow with 2nd water truck and steam cleaner tank.
- 9:10 Crew arrives at D-^{WT} C-42 and sets up grout plant and water trucks. I inspect rig.
- 9:20 We have H's tailgate. Carl Cole onsite.
- 9:40 Carl asks why we have switched from granular bentonite to powdered bentonite grout. I am unaware of the switch. Carl asks that I recover a cupfull from the next batch and let it set up. Carl leaves site. I phone Christian Davis (Layve) and ask if he knows why. He claims that many years ago the original Layve Driller at TEAD, Blaw Wright used Benscal granular bentonite but that the State of Utah Water Well Regulations call for grout and during Christian's time drilling at TEAD he used this same product.
- 10:15 Chris calls back to say he researched further and learned that both products are the same and the difference is grain size, but that when they used the granular they only used 1 bag per batch of water as opposed to 2 of the powdered and even at that it was hard to pump and was more likely to pull a well apart as did happen one at least one occasion.
- 11:40 Richard calls to say he and Carl and Doug McKenzie who is onsite today have determined a design for the below ground surface completion of C-42. He will stop by and show me on his way to have

11/15/04 (cont)

the UID office approve.

- 12:30 Richan Turk onsite with well construction diagram for C-42 subsurface completion.
- 12:50 The main lifting cable comes out of the spool and is too frayed to rethread so crew is trying to cut off the end with a rot so sharp hacksaw.
- 13:30 Cable is repaired. Tom says only 30 feet of casing left in borehole.
- 14:04 Hole is grouted to 5' bgs from 330.4' bgs. This required 89-50 lb bags of Pure Golo powdered bentonite. Each ^{bag} The manufacturer states that each bag when mixed with 14 gallons water will yield 2.2 ft³. (The crew mixes 2 bags with 28 gallon water per bag). As per page 48, a 9" borehole with a 4" well produces 0.35 ft³ of space per linear foot in the annulus. Therefore 325.4 ft (linear) has 113.9 ft³ of space.
- $113.9 \text{ ft}^3 / 2.2 \text{ ft}^3/\text{bag} = 52 \text{ bags}$. Due to porosity of the formation and likely a larger than 9" borehole we needed an additional 37 bags. This is in line with what we have seen in the previous well.
- Crew cleans up site and prepares to mob equipment to the 90-Day yard for decontamination.
- 14:50 Dave begins decon of the first pipe truck. Nate creates a drip pan under the driver truck as a small amount of hydraulic fluid has leak onto ground. Tom digs up asphalt where the leak occurred and disposes of it.
- 16:10 First Pipe Truck is decontaminated. Dave moves second truck into place. Nate sets up to pump out the sump.
- 16:14 Jeff Bigelow calls to ask if I could enter my own daily quality report on computer to alleviate them having to. We will meet in 614 in 20 min.
- 16:32 I arrive at 614 and enter daily report.
- 17:10 I return to 90-Day yard where crew is pumping out the sump on the decon pad.

11/15/04 (cont)

17:40 It is dark so we drain hoses and suspend operations until tomorrow.

17:50 All hands offsite

Watt/ans 11/15/04

Tuesday 11/16/04

weather: clear (64°) no wind

- 7:10 I arrive at C-42. I call "outback shack" to service outhouse. Very inconsistent servicing. I go to building 614
- 7:50 Christian Davis calls to say he is on his way out with Tom to look at the recoil dampener on the hammer head. He thinks this may be why the fuel line keeps cracking
- 8:10 The Layne Crew and Chris are at 90-day yard inspecting rig. Dave was going to decou second pipe truck but the steam cleaner line was not treated with coolant last night and is frozen.
- 8:25 Chris has determined recoil dampener is O.K. Chris has provided Tom with a different type fuel line to try. Chris takes the bit to have hard faced and will have someone run it back out this afternoon.
- 8:35 Tom forgot to get gas for the steam cleaner so he goes to town for gas
- 8:50 Carl Cole & Larry McFarland oversight to see if my key fits the new government locks. It does not. They will have new keys made
- 9:05 Dave gets steamer working & begins to decou 2nd pipe truck. Carl is unable to get an O.K. from Helge on the subsurface completion for C-42 so we will move to C-44 and set up to drill once rig is decoued. Because C-44 is onspot we must procure badges and vehicle passes for all vehicles at the main gate. Tom and Nate do maintenance on rig. We have H&S tailgate.
- 12:15 Groot has hammers in the space between the inner and outer walls of the dual walled casing and it is taking an extended amount of time to decou them. I drive to TEAD main gate to get my badge and vehicle pass.
- 12:50 At the gate I learn that my licence has expired and I return to 614 to let Richard

11/16/04 (cont)

know that I have to go to SLG to renew
so that I can get on depot

13:20 At 614 I call Carl and ask if he can escort
crew to E-44 once they are barged later
this afternoon. He can do so. I head to SLG

14:10 Tom calls from the gate wondering about our
destination on depot and our contact for his
page. He has not yet called Carl but will do
so

W. H. H. 11/16/04

FIELD ACTIVITY REPORT

C-42

Project Number/WBS: <u>744139/20010</u>		Date: <u>11/8/04</u>			
SWMU: <u>58</u>		Arrival Time: <u>7:20</u>			
Team Leader: <u>Richard Jurik</u>		Departure Time / Destination: _____			
Team Members: <u>Jeff Bigelow, Matt Ivers</u>		Weather: <u>overcast (~40°) light rain, wind</u> 5-10 to W			
Purpose: (Attach all appropriate forms) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Geophysical Survey <input type="checkbox"/> Soil Gas Survey <input type="checkbox"/> Hydropunch <input type="checkbox"/> Test Pit <input type="checkbox"/> GPS <input type="checkbox"/> CPT <input type="checkbox"/> Other (specify) _____ </td> <td style="width: 50%; vertical-align: top;"> <input checked="" type="checkbox"/> Well Installation <u>C-42</u> <input type="checkbox"/> Well Development _____ <input type="checkbox"/> Microwell Sampling <input type="checkbox"/> Monitor Well Sampling <input type="checkbox"/> Vertical Boring <input type="checkbox"/> Angle Boring <input type="checkbox"/> Hand Auger <input type="checkbox"/> Surface Soil Sampling </td> </tr> </table>				<input type="checkbox"/> Geophysical Survey <input type="checkbox"/> Soil Gas Survey <input type="checkbox"/> Hydropunch <input type="checkbox"/> Test Pit <input type="checkbox"/> GPS <input type="checkbox"/> CPT <input type="checkbox"/> Other (specify) _____	<input checked="" type="checkbox"/> Well Installation <u>C-42</u> <input type="checkbox"/> Well Development _____ <input type="checkbox"/> Microwell Sampling <input type="checkbox"/> Monitor Well Sampling <input type="checkbox"/> Vertical Boring <input type="checkbox"/> Angle Boring <input type="checkbox"/> Hand Auger <input type="checkbox"/> Surface Soil Sampling
<input type="checkbox"/> Geophysical Survey <input type="checkbox"/> Soil Gas Survey <input type="checkbox"/> Hydropunch <input type="checkbox"/> Test Pit <input type="checkbox"/> GPS <input type="checkbox"/> CPT <input type="checkbox"/> Other (specify) _____	<input checked="" type="checkbox"/> Well Installation <u>C-42</u> <input type="checkbox"/> Well Development _____ <input type="checkbox"/> Microwell Sampling <input type="checkbox"/> Monitor Well Sampling <input type="checkbox"/> Vertical Boring <input type="checkbox"/> Angle Boring <input type="checkbox"/> Hand Auger <input type="checkbox"/> Surface Soil Sampling				
Protection Level: <input checked="" type="checkbox"/> D <input type="checkbox"/> C <input type="checkbox"/> B <input type="checkbox"/> A					
Health and Safety Briefing: Time <u>7:40</u> People Present <u>T.K., D.K., N.S., M.I.</u>					
Topics Discussed: <u>Traffic Hazards</u>					
Logbook Book # <u>B071503</u> Page # <u>77, 78</u>		M/C Parties <input type="checkbox"/> TEU Response <input type="checkbox"/> Lockheed Monitoring Notified <input type="checkbox"/> Range Control/Security (460) <input type="checkbox"/> Pillbox Support <input type="checkbox"/> Meteorology			
Photos Camera # _____ Roll # _____ Frame # _____					
IDW Drums: Purge / Rinse / Soil / Other #ES(s) _____					
Closed?: Y / N		Current Location: _____ Update DITF?: Y / N			
Notes: <u>7:20 arrive @ C-42 7:40 H&S tailgate 7:55 rig inspection</u> <u>8:10 Carl Cole outside 8:20 Don Lee outside 8:52 Power steering pump</u> <u>hose leaking - rig can't build air pressure 9:05 Richard Jurik outside</u> <u>10:15 hose repaired 10:25 Begin C-42 12:18 @ 118' fuel line and</u> <u>injector pump broken (bolts) 14:38 Drilling again @ 118 15:05</u> <u>exhaust hose plugged at cyclone 15:28 Drilling again 15:53 @ 138</u> <u>fuel line breaks 16:40 @ 139 injector bolts won't stay tight - shut down</u> <u>16:45 Tomi does daily 16:55 Ali hand leave C-41. I go to 614 for</u> <u>file copies</u>					

FIELD ACTIVITY REPORT

C-42

Project Number/WBS: <u>744139/20010</u>		Date: <u>11/9/04</u>			
SWMU: <u>58</u>		Arrival Time: <u>7:10</u>			
Team Leader: <u>Richard Jurick</u>		Departure Time / Destination: <u>17:40</u>			
Team Members: <u>Matt Ivers, Jeff Bigelow</u>		Weather: <u>overcast (40°) no wind</u>			
Purpose: (Attach all appropriate forms) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Geophysical Survey <input type="checkbox"/> Soil Gas Survey <input type="checkbox"/> Hydropunch <input type="checkbox"/> Test Pit <input type="checkbox"/> GPS <input type="checkbox"/> CPT <input type="checkbox"/> Other (specify) _____ </td> <td style="width: 50%; vertical-align: top;"> <input checked="" type="checkbox"/> Well Installation <u>C-42</u> <input type="checkbox"/> Well Development _____ <input type="checkbox"/> Microwell Sampling <input type="checkbox"/> Monitor Well Sampling <input type="checkbox"/> Vertical Boring <input type="checkbox"/> Angle Boring <input type="checkbox"/> Hand Auger <input type="checkbox"/> Surface Soil Sampling </td> </tr> </table>				<input type="checkbox"/> Geophysical Survey <input type="checkbox"/> Soil Gas Survey <input type="checkbox"/> Hydropunch <input type="checkbox"/> Test Pit <input type="checkbox"/> GPS <input type="checkbox"/> CPT <input type="checkbox"/> Other (specify) _____	<input checked="" type="checkbox"/> Well Installation <u>C-42</u> <input type="checkbox"/> Well Development _____ <input type="checkbox"/> Microwell Sampling <input type="checkbox"/> Monitor Well Sampling <input type="checkbox"/> Vertical Boring <input type="checkbox"/> Angle Boring <input type="checkbox"/> Hand Auger <input type="checkbox"/> Surface Soil Sampling
<input type="checkbox"/> Geophysical Survey <input type="checkbox"/> Soil Gas Survey <input type="checkbox"/> Hydropunch <input type="checkbox"/> Test Pit <input type="checkbox"/> GPS <input type="checkbox"/> CPT <input type="checkbox"/> Other (specify) _____	<input checked="" type="checkbox"/> Well Installation <u>C-42</u> <input type="checkbox"/> Well Development _____ <input type="checkbox"/> Microwell Sampling <input type="checkbox"/> Monitor Well Sampling <input type="checkbox"/> Vertical Boring <input type="checkbox"/> Angle Boring <input type="checkbox"/> Hand Auger <input type="checkbox"/> Surface Soil Sampling				
Protection Level: <input checked="" type="checkbox"/> D <input type="checkbox"/> C <input type="checkbox"/> B <input type="checkbox"/> A					
Health and Safety Briefing: Time <u>7:25</u> People Present <u>TK DK MI NS (ide)</u>					
Topics Discussed: <u>lifting Hazards</u>					
Logbook Book # <u>B071503</u> Page # <u>79</u>		M/C Parties <input type="checkbox"/> TEU Response <input type="checkbox"/> Lockheed Monitoring Notified <input type="checkbox"/> Range Control/Security (460) <input type="checkbox"/> Pillbox Support <input type="checkbox"/> Meteorology			
Photos Camera # _____ Roll # _____ Frame # _____					
IDW Drums: Purge / Rinse / Soil / Other #ES(s) _____					
Closed?: Y / N		Current Location: _____ Update DITF?: Y / N			
Notes: <u>7:10 Arrive at C-42 7:20 Tom and Dave arrive.</u> <u>7:25 We have HSS 7:40 I do rig inspection 7:45 Nate</u> <u>arrives - I repeat HSS 7:50 Tom attaches vibration dampener</u> <u>to fuel line in hopes of ending constant breakage 7:58 Drilling @</u> <u>139' 9:14 @ 158 fuel line trouble I go to C-41 where Viola is developing</u> <u>10:10 Drilling again 10:52 @ 172 last fuel line breaks Crew sends for more</u> <u>13:21 Drilling again 14:56 @ 223' wedge on bolt breaks 15:21 Drilling again</u> <u>16:36 Quit @ 249' Viola to 90-Day to unload from Development water</u> <u>16:45 Sign Drillers Daily 17:00 To 614 to make copies for file 17:40 off site</u>					

FIELD ACTIVITY REPORT

C-42

Project Number/WBS: <u>744139/20010</u>		Date: <u>11/10/04</u>	
SWMU: <u>58</u>		Arrival Time: <u>7:10</u>	
Team Leader: <u>Richard Turrie</u>		Departure Time/Destination: <u>17:40</u>	
Team Members: <u>Matt Ivers Jeff Bigelow</u>		Weather: <u>overcast (~32°)</u> ^{WIND} <u>10-20 mph to N</u>	

Purpose: (Attach all appropriate forms)		<input checked="" type="checkbox"/> Well Installation <u>C-42</u>
<input type="checkbox"/> Geophysical Survey		<input type="checkbox"/> Well Development
<input type="checkbox"/> Soil Gas Survey		<input type="checkbox"/> Microwell Sampling
<input type="checkbox"/> Hydropunch		<input type="checkbox"/> Monitor Well Sampling
<input type="checkbox"/> Test Pit		<input type="checkbox"/> Vertical Boring
<input type="checkbox"/> GPS		<input type="checkbox"/> Angle Boring
<input type="checkbox"/> CPT		<input type="checkbox"/> Hand Auger
<input type="checkbox"/> Other (specify) _____		<input type="checkbox"/> Surface Soil Sampling

Protection Level: <input checked="" type="checkbox"/> D <input type="checkbox"/> C <input type="checkbox"/> B <input type="checkbox"/> A	
Health and Safety Briefing: Time <u>7:55</u> People Present <u>TKD, K, NS, MI</u>	
Topics Discussed: <u>Dust Hazards</u>	

Logbook Book # <u>3071503</u>	M/C Parties <input type="checkbox"/> TEU Response <input type="checkbox"/> Lockheed Monitoring Notified <input type="checkbox"/> Range Control/Security (460) <input type="checkbox"/> Pillbox Support <input type="checkbox"/> Meteorology
Page # <u>81, 82</u>	

Photos Camera # _____	Roll # _____	Frame # _____
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IDW Drums: Purge / Rinse / Soil / Other #ES(s)	
Closed?: Y / N	Current Location: _____ Update DITF?: Y / N

Notes: <u>7:10 Arrive at site 7:15 Arrive at 614 7:30 Back at C-42</u>	
<u>7:45 Crew arrives w/ drums 7:55 H&S tailgate 8:21 Begin Drilling</u>	
<u>at 249' 12:07 Fuel line failure 12:24 2nd Failure - crew has to have</u>	
<u>another brought from SLK 13:40 Bob Lattimer delivers new line. Crew</u>	
<u>installs. 14:36 Drilling 15:10 Carl Cole on site 15:26 Repair fuel line</u>	
<u>15:49 Drilling 16:23 Carl Cole off site @ 318' 16:59 320' bgs</u>	
<u>17:25 Sign driller Bailey report go to 614 for file copies</u>	
<u>17:40 Leave site</u>	

FIELD ACTIVITY REPORT

C-42

Project Number/WBS: 744139/20010

Date: 11/11/04

SWMU: 58

Arrival Time: 7:15

Team Leader: Richard Jurk

Departure Time Destination: 17:46

Team Members: Math Ivers, Jeff Bigelow Weather: partly cloudy (45°) no wind

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
- ☐ Soil Gas Survey
- ☐ Hydropunch
- ☐ Test Pit
- ☐ GPS
- ☐ CPT
- ☐ Other (specify) _____

- ☒ Well Installation C-42
- ☐ Well Development _____
- ☐ Microwell Sampling
- ☐ Monitor Well Sampling
- ☐ Vertical Boring
- ☐ Angle Boring
- ☐ Hand Auger
- ☐ Surface Soil Sampling

Protection Level: ☒ D ☐ C ☐ B ☐ A

Health and Safety Briefing: Time 8:50 People Present MI TK DK NS

Topics Discussed: Proper PPE

Logbook Book # B071503

Page # 83,84

M/C Parties

☐ TEU Response ☐ Lockheed Monitoring

Notified

☐ Range Control/Security (460)

☐ Pillbox Support ☐ Meteorology

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: Purge / Rinse / Soil / Other #ES(s)

Closed?: Y / N

Current Location:

Update DITF?: Y / N

Notes: 7:15 Arrive at C-42 7:45 Calibrate PID (103.4 on 100)
8:10 Crew arrives 8:20 Rig inspection 8:50 H₂S tailgate
9:20 Drilling at 320' 10:25 @ 330 free water - set up
secondary containment 11:01 @ 334 fuel line breaks
12:15 Drilling 12:50 Fuel line breaks 13:25 Drilling @ 336
13:54 @ 342 fuel line breaks 14:09 Drilling 14:39 W.L.=322.4 bgs
Pump containment into truck 15:16 360' bgs Take W.L.=318.9 bgs
Try to get water - cannot due to Veterans Day 15:50 Take Drum
& Water Truck to 90 Day 16:20 Secure well head @ C-42
16:36 Sign Drillers Bailey Go to 614 17:46 Leave UID

FIELD ACTIVITY REPORT

C-42

Project Number/WBS: <u>744139/20010</u>		Date: <u>11/12/04</u>	
SWMU: <u>58</u>		Arrival Time: <u>7:05</u>	
Team Leader: <u>Richard Jurik</u>		Departure Time / Destination: <u>13:50</u>	
Team Members: <u>Matt Luens Jeff Bigelow</u> Weather: <u>rain (40°) no wind</u>			
Purpose: (Attach all appropriate forms) <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <input type="checkbox"/> Geophysical Survey <input type="checkbox"/> Soil Gas Survey <input type="checkbox"/> Hydropunch <input type="checkbox"/> Test Pit <input type="checkbox"/> GPS <input type="checkbox"/> CPT <input type="checkbox"/> Other (specify) _____ </div> <div style="width: 48%;"> <input checked="" type="checkbox"/> Well Installation <u>C-42</u> <input type="checkbox"/> Well Development _____ <input type="checkbox"/> Microwell Sampling <input type="checkbox"/> Monitor Well Sampling <input type="checkbox"/> Vertical Boring <input type="checkbox"/> Angle Boring <input type="checkbox"/> Hand Auger <input type="checkbox"/> Surface Soil Sampling </div> </div>			
Protection Level: <input checked="" type="checkbox"/> D <input type="checkbox"/> C <input type="checkbox"/> B <input type="checkbox"/> A			
Health and Safety Briefing: Time <u>7:45</u> People Present <u>TK, DK, ME, US</u>			
Topics Discussed: <u>Drum Truck Hazards</u>			
Logbook Book # <u>B071503</u> Page # <u>85, 86</u>		M/C Parties <input type="checkbox"/> TEU Response <input type="checkbox"/> Lockheed Monitoring Notified <input type="checkbox"/> Range Control/Security (460) <input type="checkbox"/> Pillbox Support <input type="checkbox"/> Meteorology	
Photos Camera # _____ Roll # _____ Frame # _____			
IDW Drums: Purge / Rinse / Soil / Other #ES(s) _____			
Closed?: Y / N		Current Location: _____ Update DITF?: Y / N	
Notes: <u>7:05 Arrive at site 7:45 Crew arrives. Connect H&S 8:10 Inspect Drum Truck Go to 90-Day yard and transfer water to Baker tank & Unload Drums 9:05 Back to C-42 Take W.L = 318.95 bgs Begin constructing well - Screen 359-339. Sand 360-336.5 Bentonite Seal 336.5 to 330.4 13:30 Crew off site I go to 614 to fax Daileys. Can't Fax - head to Kleinfelder to fax and work on well construction reports</u>			

C-42

Project Number/WBS: 744139/20010 Date: 11-14-04
 SWMU: 58/TEAD well development C-42 Arrival Time: 07:00 ^{08:00}
 Team Leader: Gr Calvert Departure Time \ Destination: 14:00
 Team Members: J. Henman, T. Fetzner Weather: overcast, rain 30-40°F, 14 wind

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
☐ Soil Gas Survey
☐ Hydropunch
☐ Test Pit
☐ GPS
☐ CPT
☐ Other (specify) _____

- ☐ Well Installation
☒ Well Development C-42
☐ Microwell Sampling
☐ Monitor Well Sampling
☐ Vertical Boring
☐ Angle Boring
☐ Hand Auger
☐ Surface Soil Sampling

Protection Level: ☒ D ☐ C ☐ B ☐ A

Health and Safety Briefing: Time 07:00 ^{08:00} People Present see above

Topics Discussed: Don't get loose clothes caught in stuff

Logbook Book # _____
 Page # _____

M/C Parties ☐ TEU Response ☐ Lockheed Monitoring
 Notified ☐ Range Control/Security (460)
☐ Pillbox Support ☐ Meteorology

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: Purge Rinse / Soil / Other #ES(s) PARSN20430901

Closed?: Y/☒ N Current Location: U1D 90-day yard Update DITE?: Y/N

Notes: 08:28 Restarted pumping of C-42 at 7pm,
intake at 357 ft bgs

08:41 Backflushed 5x

10:12 Parameters stable, Turbidity at 1.71 NTUs/pump out

11:02 Decon equipment

13:10 At U1D 90-day yard, pump ~ 500 gallons of
purge water into PARSN20430901

14:00 off site

C-42

Project Number/WBS: 744139/20010 Date: 11/15/04SWMU: 58 Arrival Time: 7:15Team Leader: Richard Jurik Departure Time / Destination: _____Team Members: Jeff Bigelow Matt Wiers Weather: overcast (~35°) no wind

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
☐ Soil Gas Survey
☐ Hydropunch
☐ Test Pit
☐ GPS
☐ CPT
☐ Other (specify) _____

- ☒ Well Installation C-42
☐ Well Development _____
☐ Microwell Sampling
☐ Monitor Well Sampling
☐ Vertical Boring
☐ Angle Boring
☐ Hand Auger
☐ Surface Soil Sampling

Protection Level: ☒ D ☐ C ☐ B ☐ AHealth and Safety Briefing: Time 9:20 People Present TK, DK, ME, NSTopics Discussed: 90 Day SafetyLogbook Book # B041503
Page # 87

M/C Parties ☐ TEU Response ☐ Lockheed Monitoring
 Notified ☐ Range Control/Security (460)
☐ Pillbox Support ☐ Meteorology

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: Purge / Rinse / Soil / Other #ES(s)

Closed?: Y / N

Current Location:

Update DITF?: Y / N

Notes: 7:15 Arrive at site 7:50 Crew onsite 8:15 Prepare
water for grouting 9:10 Rig inspection, 9:20 H/S tailgate
14:04 Complete grouting from 330.4 to 5' bgs
89.50 lb bags pure gold grout 14:50 Begin Decou of
pipe trucks ~~15:00~~ 16:10 First Pipetruck decouered
Crew begins second Grout between dual walls is
stubborn 17:10 Crew is pumping water from sump
17:30 All hands off site

C-42

Project Number/WBS: <u>744139/20010</u>		Date: <u>11-18-04</u>	
SWMU: _____		Arrival Time: <u>830</u>	
Team Leader: <u>PARSONS - G. CALVERT</u> <u>PSG SEPP HANNAH</u>		Departure Time / Destination: <u>/</u>	
Team Members: <u>TERRY FETZER</u>		Weather: <u>CLEAR / COLD</u>	

Purpose: (Attach all appropriate forms)			
<input type="checkbox"/>	Geophysical Survey	<input type="checkbox"/>	Well Installation
<input checked="" type="checkbox"/>	Soil Gas Survey <u>SAMPLE VSG-001</u>	<input checked="" type="checkbox"/>	Well Development <u>C-42</u>
<input type="checkbox"/>	Hydropunch	<input type="checkbox"/>	Microwell Sampling
<input type="checkbox"/>	Test Pit	<input type="checkbox"/>	Monitor Well Sampling
<input type="checkbox"/>	GPS	<input type="checkbox"/>	Vertical Boring
<input type="checkbox"/>	CPT	<input type="checkbox"/>	Angle Boring
<input type="checkbox"/>	Other (specify) _____	<input type="checkbox"/>	Hand Auger
		<input type="checkbox"/>	Surface Soil Sampling

Protection Level: <input checked="" type="checkbox"/> D <input type="checkbox"/> C <input type="checkbox"/> B <input type="checkbox"/> A	
Health and Safety Briefing: Time <u>830</u> People Present <u>SEE ABOVE</u>	
Topics Discussed: <u>PPE, COLD WEATHER, SLIPS & TRIPS...</u>	

Logbook Book # <u>1</u>	M/C Parties <input type="checkbox"/> TEU Response <input type="checkbox"/> Lockheed Monitoring Notified <input type="checkbox"/> Range Control/Security (460) <input type="checkbox"/> Pillbox Support <input type="checkbox"/> Meteorology
Page # <u>2-4</u>	

Photos Camera # _____	Roll # _____	Frame # _____
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IDW Drums: Purge / Rinse / Soil / Other #ES(s)
Closed?: Y / N Current Location: _____ Update DITF?: Y / N

Notes: <u>0830 HSE DRIERING AT WELL C-42. PSG</u> <u>BEGINS WELL DEVELOPMENT. 0915 ARRIVE AT</u> <u>WELL VSG 001 AND BEGIN SOIL GAS SAMPLING.</u> <u>1036 SECURE SITE AND DEPART VSG 001. 1400 BEGIN</u> <u>PUMP DRAWDOWN TEST. PSG CONTINUES DEVELOPMENT.</u> <u>1600⁰⁰ 1540 STOP PUMP AND MEASURE RECHARGE.</u> <u>1628 PSG DEPARTS SITE FOR 90-DAY TO OFFLOAD</u> <u>600 gal OF DEVELOPMENT WATER. 1703 DEPART AND</u> <u>SECURE 90-DAY.</u>
--

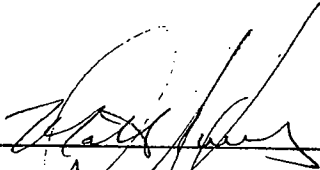
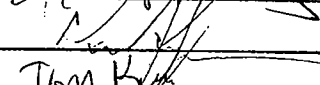
HEALTH AND SAFETY BRIEFING

Date: 11 / 18 / 04

Time: 7:40

Site Health and Safety Officers(s)

ATTENDEES SIGNATURE

1. 	11.
2. 	12.
3. Tom	13.
4. Nathan Salazar	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. Because we are working close to a somewhat
2. used roadway it is important to look both
3. ways before entering street. Drive over the
4. cobblestone in the same location each time
5. in order to minimize damaging effects
- 6.
- 7.
- 8.
- 9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

HEALTH AND SAFETY BRIEFING

Date: 11 / 9 / 04

Time: 7:25

Site Health and Safety Officers(s)

ATTENDEES SIGNATURE

1. <u>[Signature]</u>	11.
2. <u>[Signature]</u>	12.
3. <u>[Signature]</u>	13.
4. <u>Nathan Salazar</u>	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. Because there are only 2 crew members
2. today some extra lifting may be necessary
3. Remember to follow proper lifting technique
4. Bend at the knees, don't twist while lifting
5. Keep head up when lifting. Get help when
6. necessary
7. * Note was delivered to the site later
8. by Randy Smith
- 9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

HEALTH AND SAFETY BRIEFING

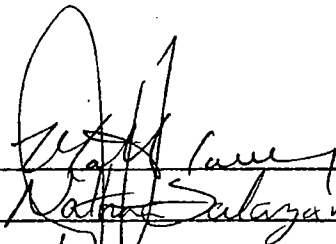
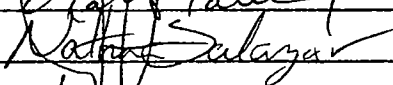

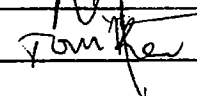
Date: 11 / 10 / 04

Time: 7:55

Site Health and Safety Officers(s)

ATTENDEES SIGNATURE

WELL C-42

1. 	11.
2. 	12.
3. 	13.
4. 	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. Cuttings are blowing in the direction of the
2. drill operator. It strongly recommends the operator
3. uses the dust masks provided while this
4. condition exists. Make every attempt to stay
5. upwind of the cyclone cloud
- 6.
- 7.
- 8.
- 9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

HEALTH AND SAFETY BRIEFING

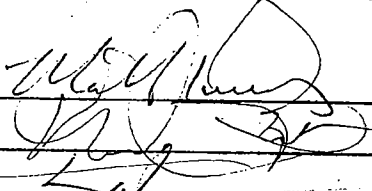


Date: 11 / 11 / 09

Time: 8:50

Site Health and Safety Officers(s)

ATTENDEES SIGNATURE

WEL C-42

1.		11.
2.		12.
3.		13.
4.	Tom Kees	14.
5.		15.
6.		16.
7.		17.
8.		18.
9.		19.
10.		20.

AGENDA

1. We will penetrate the saturated zone
2. today. This requires the use of vibrators
3. gloves and avoidance of hand to mouth
4. contact
- 5.
- 6.
- 7.
- 8.
- 9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

HEALTH AND SAFETY BRIEFING

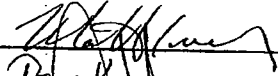
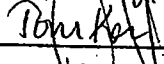
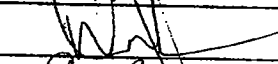
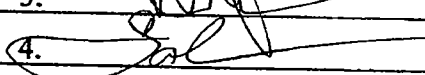
Date: 11 / 12 / 04

Time: 7:45

Site Health and Safety Officers(s)

ATTENDEES SIGNATURE

WEN C-42

1. 	11.
2. 	12.
3. 	13.
4. 	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. Several Hazards are no play while operating
2. Drum truck. Overhead hazard - always avoid being
3. in anyway under a suspended drum or the boom
4. Pinch hazard - The lifting clamp wants to hurt you
5. Dont let it. Exhaust fume hazard - this is not a
6. clean burning machine so avoid standing in the
7. exhaust plume. Outrigger hazard - stay clear of the
8. rig while operator is extending outriggers
- 9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

642

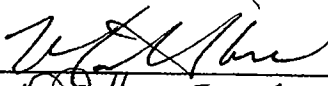

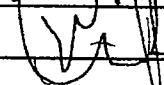
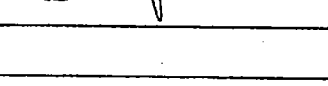
HEALTH AND SAFETY BRIEFING

Date: 11 / 15 / 04

Time: 9:20

Site Health and Safety Officers(s)

ATTENDEES SIGNATURE

1. 	11.
2. 	12.
3. 	13.
4. 	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. Kurt has created a system for emptying
2. the fees hoses to the Baker Tank in the
3. 90 day yard so they will not freeze. Carefull
4. use of the system will avoid exposure
5. to Decon and Development water. Always
6. operate with intule gloves and eye protection
- 7.
- 8.
- 9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

HEALTH AND SAFETY BRIEFING

Date: 11 / 18 / 04

Time: 830

Site Health and Safety Officers(s)

ATTENDEES SIGNATURE

Well C-42

1. <u>Jeffrey Thompson</u>	11.
2. <u>[Signature]</u>	12.
3. <u>[Signature]</u>	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. <u>PPE, Gloves, COLD WEATHER. SLIP TRIPS</u>
2.
3.
4.
5.
6.
7.
8.
9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

Layne Christensen Company Job Site Safety

C-42

Date 11/8/04

Site: TEAD Phase II RFI

Client: USACE

Rig/Crew: Tom Kern, Nate Salazar, Dave Kyle

Observers: Matt Ivers

Crew Safety/PPE	YES	NO	N/A		YES	NO	N/A
Hard Hat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Safety Glasses	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lifting Belt / harness	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Training Certificates	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Gloves	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hearing Protection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety Shoes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Proper Clothing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Layne Safety Practice Manual	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dust masks/Level C respirators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DOT physical card, CDL and logbooks present and up to date?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Emergency numbers/HASP present and posted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments: Repaired power steering hose on rig in order to build pressure - tapped and replaced broken bolt on hammer wjector

Site Set-up and Safety

Hole openings covered or tied off?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Timbers and set-up jacks stable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anchor guy lines secure, evenly tensioned and flagged?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mud or circulation pits barricaded or fenced?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Excavation permit (CA) and shoring considerations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Traveling blocks, widow makers and elevators inspected?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Site clean and organized? Footing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bulk fuel stores lined and grounded?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pipe blocked and sloped from work area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Correct monitoring equipment present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overhead and underground lines identified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Chemicals stored away from fuel and protected?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Material Safety Data Sheets present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Warning signs/Exclusion zone posted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

Rig Safety

Kill switch operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All mast wiring in conduits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle pretrip inspection performed and documented?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Seat belts available and used on all equipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire extinguisher present and charged?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	First aid/BBP kit present and stocked?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Danger points color coded?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Controls identified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Side guardrails on platform rigs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ropes and chains in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Belts and rotating shafts guarded?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All hooks have safety latches?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cables in good shape, clamps installed properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pressure hoses safety chained at connections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Good housekeeping in vehicle cabs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Spill control materials present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Layne Christensen Company Job Site Safety

C-42

Date 11/9/04

Site: TEXD Phase II RFI

Client: USACE

Rig/Crew: Tom Kern Dave Kyle

Observers: Matt Ivers

Crew Safety/PPE

YES NO N/A

YES NO N/A

Hard Hat

☒ ☐ ☐

Safety Glasses

☒ ☐ ☐

Lifting Belt/Harness

☒ ☐ ☐

Training Certificates

☐ ☐ ☒

Gloves

☒ ☐ ☐

Hearing Protection

☒ ☐ ☐

Safety Shoes

☒ ☐ ☐

Proper Clothing

☒ ☐ ☐

Layne Safety Practice Manual

☐ ☐ ☒

Dust masks/Level C respirators

☒ ☐ ☐DOT physical card, CDL and logbooks
present and up to date?☐ ☐ ☒Emergency numbers/HASP present
and posted?☒ ☐ ☐

Comments:

Tom attaches a rubber grommet and steel
bracket to hammer and fuel line to dampen
vibration and hopefully keep it from breaking
so frequently

Site Set-up and Safety

Hole openings covered or tied off?

☐ ☐ ☒

Timbers and set-up jacks stable?

☒ ☐ ☐Anchor guy lines secure, evenly
tensioned and flagged?☐ ☐ ☒Mud or circulation pits barricaded
or fenced?☐ ☐ ☒Excavation permit (CA) and shoring
considerations?☐ ☐ ☒Traveling blocks, widow makers and
elevators inspected?☐ ☐ ☒

Site clean and organized? Footing?

☒ ☐ ☐

Bulk fuel stores lined and grounded?

☐ ☐ ☒

Pipe blocked and sloped from work area?

☒ ☐ ☐

Correct monitoring equipment present?

☒ ☐ ☐

Overhead and underground lines identified?

☒ ☐ ☐

Chemicals stored away from fuel and protected?

☐ ☐ ☒

Material Safety Data Sheets present?

☒ ☐ ☐

Warning signs/Exclusion zone posted?

☒ ☐ ☐

Comments:

Rig Safety

Kill switch operational?

☒ ☐ ☐

All mast wiring in conduits?

☒ ☐ ☐Vehicle pretrip inspection performed and
documented?☐ ☐ ☒Seat belts available and used on all
equipment?☒ ☐ ☐

Fire extinguisher present and charged?

☒ ☐ ☐

First aid/BBP kit present and stocked?

☒ ☐ ☐

Danger points color coded?

☐ ☐ ☒

Controls identified?

☒ ☐ ☐

Side guardrails on platform rigs?

☐ ☐ ☒

Ropes and chains in good condition?

☒ ☐ ☐

Belts and rotating shafts guarded?

☒ ☐ ☐

All hooks have safety latches?

☒ ☐ ☐

Cables in good shape, clamps installed properly?

☒ ☐ ☐

Pressure hoses safety chained at connections?

☒ ☐ ☐

Good housekeeping in vehicle cabs?

☐ ☐ ☒

Spill control materials present?

☒ ☐ ☐

Layne Christensen Company Job Site Safety

C-42

Date 11/10/04

Site: TEAD Phase II RFI

Client: USACE

Rig/Crew: Tom Kew, Nate Salazar, Dave Kyle

Observers: Matt Ivers

Crew Safety/PPE

	YES	NO	N/A		YES	NO	N/A
Hard Hat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Safety Glasses	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lifting Belt	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Training Certificates	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Gloves	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hearing Protection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety Shoes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Proper Clothing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Layne Safety Practice Manual	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dust masks/Level C respirators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DOT physical card, CDL and logbooks present and up to date?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Emergency numbers/HASP present and posted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments: Very Dusty Drilling Strongly suggest Driller uses Dust mask in his tailgate

Site Set-up and Safety

Hole openings covered or tied off?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Timbers and set-up jacks stable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anchor guy lines secure, evenly tensioned and flagged?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mud or circulation pits barricaded or fenced?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Excavation permit (CA) and shoring considerations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Traveling blocks, widow makers and elevators inspected?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Site clean and organized? Footing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bulk fuel stores lined and grounded?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pipe blocked and sloped from work area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Correct monitoring equipment present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overhead and underground lines identified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Chemicals stored away from fuel and protected?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Material Safety Data Sheets present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Warning signs/Exclusion zone posted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

Rig Safety

Kill switch operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All mast wiring in conduits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle pretrip inspection performed and documented?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Seat belts available and used on all equipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire extinguisher present and charged?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	First aid/BBP kit present and stocked?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Danger points color coded?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Controls identified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Side guardrails on platform rigs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ropes and chains in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Belts and rotating shafts guarded?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All hooks have safety latches?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cables in good shape, clamps installed properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pressure hoses safety chained at connections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Good housekeeping in vehicle cabs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Spill control materials present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Layne Christensen Company Job Site Safety

Date 11/11/04 Site: TEAD Phase II RFI @ SWMU 5B ^{WBL-C-42} Client: USACE

Rig/Crew: Tom Kern Nate Salazar Dave Kyle

Observers: Matt Ivers Carl Cole

Crew Safety/PPE			YES	NO	N/A				YES	NO	N/A
Hard Hat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Safety Glasses	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Lifting Belt	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Training Certificates	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Gloves	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Hearing Protection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Safety Shoes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Proper Clothing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Layne Safety Practice Manual	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			Dust masks/Level C respirators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
DOT physical card, CDL and logbooks present and up to date?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			Emergency numbers/HASP present and posted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Comments: Tom replaced head injector in hopes of minimizing fuel line breakage with little luck

Site Set-up and Safety

Hole openings covered or tied off?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			Timbers and set-up jacks stable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Anchor guy lines secure, evenly tensioned and flagged?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Mud or circulation pits barricaded or fenced?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Excavation permit (CA) and shoring considerations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			Traveling blocks, widow makers and elevators inspected?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Site clean and organized? Footing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Bulk fuel stores lined and grounded?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Pipe blocked and sloped from work area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Correct monitoring equipment present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Overhead and underground lines identified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Chemicals stored away from fuel and protected?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Material Safety Data Sheets present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Warning signs/Exclusion zone posted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Comments:

Rig Safety

Kill switch operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			All mast wiring in conduits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Vehicle pretrip inspection performed and documented?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			Seat belts available and used on all equipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Fire extinguisher present and charged?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			First aid/BBP kit present and stocked?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Danger points color coded?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			Controls identified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Side guardrails on platform rigs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			Ropes and chains in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Belts and rotating shafts guarded?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			All hooks have safety latches?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Cables in good shape, clamps installed properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Pressure hoses safety chained at connections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Good housekeeping in vehicle cabs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			Spill control materials present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Layne Christensen Company Job Site Safety

Date 11/12/04 Site: TEAD Phase II RFI/SAWO 22 Client: USACE

Rig/Crew: Tom Kern, Dave Kyle, Nate Salazar

Observers: Matt Ivers

Crew Safety/PPE	YES	NO	N/A		YES	NO	N/A
Hard Hat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Safety Glasses	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lifting Belt / <u>Harness</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Training Certificates	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Gloves	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hearing Protection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety Shoes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Proper Clothing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Layne Safety Practice Manual	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dust masks/Level C respirators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DOT physical card, CDL and logbooks present and up to date?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Emergency numbers/HASP present and posted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

Site Set-up and Safety

Hole openings covered or tied off?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Timbers and set-up jacks stable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anchor guy lines secure, evenly tensioned and flagged?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mud or circulation pits barricaded or fenced?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Excavation permit (CA) and shoring considerations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Traveling blocks, widow makers and elevators inspected?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Site clean and organized? Footing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bulk fuel stores lined and grounded?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pipe blocked and sloped from work area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Correct monitoring equipment present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overhead and underground lines identified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Chemicals stored away from fuel and protected?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Material Safety Data Sheets present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Warning signs/Exclusion zone posted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

Tires, Horns, Lights, batteries, brakes, wipers, fluid levels

Rig Safety

Kill switch operational?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All mast wiring in conduits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle pretrip inspection performed and documented?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Seat belts available and used on all equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire extinguisher present and charged?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	First aid/BBP kit present and stocked?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Danger points color coded?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Controls identified?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Side guardrails on platform rigs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ropes and chains in good condition?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Belts and rotating shafts guarded?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All hooks have safety latches?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cables in good shape, clamps installed properly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pressure hoses safety chained at connections?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Good housekeeping in vehicle cabs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spill control materials present?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C-42

Layne Christensen Company Job Site Safety

Date 11/15/04

Site: TEAD Phase II RFI

Client: USACE

Rig/Crew: Tom Kern, Nate Salazar, Dave Kyle

Observers: Matt Iverson

Crew Safety/PPE

	YES	NO	N/A		YES	NO	N/A
Hard Hat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Safety Glasses	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lifting Belt	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Training Certificates	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Gloves	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hearing Protection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety Shoes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Proper Clothing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Layne Safety Practice Manual	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dust masks/Level C respirators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DOT physical card, CDL and logbooks present and up to date?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Emergency numbers/HASP present and posted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments: Nate Builbas prep tray on Drum Truck to catch hydraulic leak.
Crew Decons 2 pipe trucks

Site Set-up and Safety

Hole openings covered or tied off?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Timbers and set-up jacks stable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anchor guy lines secure, evenly tensioned and flagged?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mud or circulation pits barricaded or fenced?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Excavation permit (CA) and shoring considerations?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Traveling blocks, widow makers and elevators inspected?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Site clean and organized? Footing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bulk fuel stores lined and grounded?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pipe blocked and sloped from work area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Correct monitoring equipment present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overhead and underground lines identified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Chemicals stored away from fuel and protected?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Material Safety Data Sheets present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Warning signs/Exclusion zone posted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

Tires, Horns, Lights, batteries, brakes, wipers, fluid levels ✓

Rig Safety

Kill switch operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All mast wiring in conduits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle pretrip inspection performed and documented?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Seat belts available and used on all equipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire extinguisher present and charged?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	First aid/BBP kit present and stocked?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Danger points color coded?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Controls identified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Side guardrails on platform rigs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ropes and chains in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Belts and rotating shafts guarded?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All hooks have safety latches?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cables in good shape, clamps installed properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pressure hoses safety chained at connections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Good housekeeping in vehicle cabs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Spill control materials present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

EQUIPMENT CALIBRATION LOG

Tooele Army Depot





























Eqpt. Type	Serial No.	Date	Calibration Time	Calibration Gas	Calibration Gas Lot No.	Calibrated By:	Comments
Environmental Instruments Photo Ionization Detector 580 B	580U-60884 329	9/15/04	10:00	100 PPM ISOBUTYLENE	903169	Matt Ivers	101.6 ppm D-12
		9/16/04	9:45				102.2 "
		10/7/04	11:50				99.2 D-13
		"	13:40				97.8 "
		10/11/04	8:00				97.6 "
		10/19/04	12:05				103.4 D-16
		10/20/04	8:35				101.2 "
		11/1/04	8:05				96.7 C-41
		11/2/04	12:55				97.6 "
		11/11/04	7:45				103.4 C-42
		11/19/04	9:25				104.3 C-44
		11/22/04	9:10				104.8 "
		12/7/04	12:45				101.2 C-43
		12/30/04	7:55				103.4 D-14
		1/4/05	8:50				104.2 "
		1/5/05	9:35				102.6 "
		1/6/05	11:25				103.4 "

Attachment 7-1

APPENDIX C

DRILLING LOG	DIVISION Sacramento	INSTALLATION Tooele Army Depot	SHEET 1 OF 10 SHEETS
1. PROJECT Phase II RFI @ SWMU 58		10. SIZE AND TYPE OF BIT 9" OD open flt	
2. LOCATION (Coordinates or Station) 7365504.752 N 1406335.618 E		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL	
3. DRILLING AGENCY Layne Geosconstruction		12. MANUFACTURER'S DESIGNATION OF DRILL Drill Systems AP 1000 Becker Hammer	
4. HOLE NO. (As shown on drawing title and file number) C-42F		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN 77	UNDISTURBED 0
5. NAME OF DRILLER Tom Kern		14. TOTAL NUMBER CORE BOXES —	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER 318.95 on 11/12/04	
7. THICKNESS OF OVERBURDEN 360'		16. DATE HOLE STARTED 11/8/04	COMPLETED 11/16/04
8. DEPTH DRILLED INTO ROCK 0'		17. ELEVATION TOP OF ROCK CASING 4785.09 GROUND 4785.27	
9. TOTAL DEPTH OF HOLE 360' bgs		18. TOTAL CORE RECOVERY FOR BORING %	
		19. SIGNATURE OF INSPECTOR <i>W. L. Lacey</i>	

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
9:35 10:25	2		Clayey Gravel (GC) 50% cobble to 4", 30% gravel; coarse sand 20% clay & silt, high plasticity, greyish brown 10 YR 5/2, wet * clasts are mainly quartzite (tan to grey brown) and limestone (light to dark green) or dolomite, traces of extrusive volcanic rocks rhyolites, tuffs, breccias, also trace of white chalky mineral This is true throughout borehole unless otherwise noted * clasts are also subround to subangular and water worn unless otherwise noted		0	- repair power steering hose just after starting - The Becker Hammer Method allows a maximum clast size of 6" to be delivered to the surface therefor quantities of cobble or boulders above 6" cannot be determined
10:39 10:47 10:49 11:07	10 12 14 16 18		- Sand increasing to 30% fine to coarse slightly less plastic color changes to brown 10 YR 5/3, moist		2	1.4 min/ft - crew adds exaust filter - hose plugs at head
11:14 11:25	20 22 24 26 28 30		- limestone boulders - Poorly Graded Gravel with sand (GP) 20% cobble to 5", 40-60% gravel, fine to coarse, 20-40% silty sand, fine to coarse, dark greyish brown 10 YR 4/2, moist		3 4 5	0.9 min/ft 1.1 min/ft

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS
11:38	32		- as sample #5		6	
	34					
	36				7	
	38		- Lean Clay (GL) high plasticity, reddish brown			
11:47	40		5YR 5/3, moist		8	0.9 min/ft
11:49	42					
	44					
	46		- as sample #5		9	
	48					
12:00	50				10	1.1 min/ft
12:03	52					
	54					
	56				11	
	58					
12:07	60				12	0.4 min/ft
12:18	62					
	64					
	66		- Silty Sand (SM)		13	
	68		~20% Cobble 20% gravel			
	70		moderately plastic			
			Brown 7.5 YR 5/4, moist			0.3 min/ft

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS
12:24	72		- as sample # 13		14	
	74		- Poorly Graded Gravel with sand (GP) 10-30% Cobble, 30-60% gravel 20-30% silty sand, fine to coarse, subround to subangular, Dark grey		15	
12:31	80		brown to brown 10YR 4/2 to 4/3, moist		16	0.7 min/ft
12:34	82					
	84					
	86		- Silty Clay (CL) high plasticity, very pale brown 10YR 7/3, moist		17	
	88					
12:40	90				18	0.6 min/ft
12:43	92					
	94					
	96		- as sample # 15		19	
	98		- some weak cementation observed			
12:50	100				20	0.7 min/ft
12:53	102					
	104					
	106				21	
	108		- very cobble/gravelly little sand			
13:01	110					0.8 min/ft

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS
13:04			- cobble & gravel	X	22	
	112					
	114		- Silty Gravel (GM) 10-30% Cobble, 40-60% gravel, 10-20% silt or silty fine sand, pale brown	X	23	
	116		10YR 6/3, moist to dry caliche skin observed on many clasts			
13:18 14:38	118					broken fuel line's injector bolts 2.2 min/ft
14:46 14:50	120			X	24	
	122		- limestone boulders			
	124					
	126		- Lean Clay (CL) highly plastic, trace fine gravel light reddish brown 5YR 6/3, moist	X	25A	
15:05 15:17	128		- Silty Sand (SM) moderate plasticity, trace coarse sand & fine gravel, grayish brown	X	25B	cyclone hose plugged at cyclone
15:22 15:25	130		2.5YR 5/2 moist as sample # 23 - some weak cementation observed	X	26	2.0 min/ft
	132					
	134					
	136		- traces of clay in matrix plastic & cohesive	X	27	
15:53 16:02	138		- Quartzite boulder - cuttings are <u>very moist</u>			very slow advance top barrel on fuel line broke injector bolts won't stay tight
16:20 7:58 8:05 8:08	140			X	28	5.8 min/ft
	142					
	144		- as sample 23 (GM)			
	146			X	29	
8:31 8:33	148					fuel line problem
8:40	150					3.0 min/ft

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS
8:42	152		- as sample 23		30	
	154		- grey limestone boulders		31	- very slow penetration
9:14	158					- fuel line problems
10:10	160				32	3.8 min/ft
10:16	162		- Poorly Graded Gravel (GP) 40% cobble to 6", 50% gravel, 10% fines, subround largely, mostly grey limestone caliche skin observed on most clasts, dry		33	
10:19	166		- sand increases to 30% cobble decreases grayish brown 10 R 4/2			
10:41	170		- strongly cemented layers		34	2.2 min/ft
10:44	172				35	
10:52	174					
13:21	176				36	3.1 min/ft
13:44	180		- clayey sand matrix very moist		37	
13:48	182		- sand up to 50%			
14:00	190					1.2 min/ft

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS
14:04	192		- Decreasing sand	X	38	
	194		- Poorly Graded Gravel (GP) Cobbles are 10 to 30% and up to 6"	X	39	
	196		Gravel 30 to 60%. Clasts are subrounded with frequent caliche coatings	X		
14:22	200		Silty sand comprises the remaining portion (10 to 30%) greyish brown 10YR 4/2, Dry	X	40	1.8 mm/ft
14:26	202			X		
	204			X		
	206			X	41	
	208			X		
14:33	210			X	42	0.7 mm/ft
14:36	212			X		
	214			X		
	216			X	43	
	218			X		
14:45	220		- Color changes to light yellowish brown 10YR 6/4, moist	X	44	0.9 mm/ft
14:49	222			X		
14:56	224		- color returns to grayish brown 10YR 4/2 Dry caliche skin	X	45	bolt on injector breaks off w head
15:21	226			X		
	228			X		
15:30	230			X		1.6 mm/ft

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS
15:39	232		Sandy clay (CL) high plasticity, Reddish brown 5YR 5/4, moist		46A	
	234		- strongly cemented		46B	
	236				47	- very slow penetration
	238		quartzite boulders			
16:02	240					2.3 min/ft
16:06	242		- as sample 39		48	
	244					
	246		- Lean Clay, high plasticity Reddish brown 5YR 5/4 Moist		49	
16:36	248					
8:21 11/10	250		- Strongly Cemented		50	Quit for today 4.5 min/ft
8:36	252					
8:40	254					
	256		- cement becomes very weak		51	
	258					
9:35	260		Silty Clay (CL) high plasticity, Reddish Brown 5YR 5/4, moist, Trace fine gravel or coarse sand		52	5.5 min/ft
9:39	262		- cementation is very hard and chalk white			
	264					
	266				53	
	268		- grey quartzite cobble/boulder			
10:01	270					2.2 min/ft

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS
10:05			- gray quartzite boulder	X	54	
	272		- Poorly Graded Gravel (GP) 10-30% Cobble to 6", 30-70% gravel, fine to coarse, sub angular to subround, 10-20% silty fine sand, light grey 2.5 Y 7/2, Dry			
	274					
	276			X	55	
	278					
10:14	280					1.3 min/ft
10:22			- Silty fine Sand up to 30-40%	X	56	
	282					
10:38	284					
11:06	286			X	57	fuel line repair
	288		- Sand decreases to 10-20%			
11:38	290					4.8 min/ft
11:42				X	58	
	292					
	294					
12:07	296			X	59	
14:36	298					fuel line repair
14:57	300					4.6 min/ft
15:03	302			X	60	
	304					
	306			X	61	
	308		- flat elongate clasts of moderately cemented fine grain soil, very pale brown 10 YR 7/3, moist			2.3 min/ft - repairing fuel line
15:16	310					

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS	PID
15:49	312		- Poorly Graded Gravel with Silty fine Sand (GP)		62		
	314		- strongly cemented				
	316		- clayey Sand (SC) moderate plasticity, fine to med grain brown 7.5YR 5/2 moist		63A 63B		
	318		- moderately cemented flint elliptical clasts of fine grain soil			- very slow penetration	
16:59	320		- Clayey Sand as 63A			7.0 mm/ft	
9:20 ON 11/11	322		- Fat Clay (CH) with gravel high plasticity, hard, with fine gravel to 4" cobble (60%) Yellowish Red 5YR 4/6 moist		64A 64B	final water level 318.95	
	324						
	326		- Poorly Graded Gravel (GP) with Silty fine sand - 20% Cobble to 6", 60% gravel fine to coarse		65		
	328		- 20% Silty fine Sand and Silt light brownish grey 2.5Y 5/2 moist				
10:22	330		- first free water observed		66	6.2 mm/ft	
10:48	332		- moderately cemented layer			Set up secondary containment	0.2
11:01	334						
12:15	336				67		0.4
12:50	338		- strongly cemented			- fuel line repair	
13:15	340					- fuel line repair	
13:36	342				68	6.9 mm/ft	0.0
13:41	344						
13:54	346				69	- fuel line repair	0.2
14:09	348		- as sample 65				
14:39	350					4.3 mm/ft	

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS	PID
14:50			- Poorly Graded Gravel (GP) 5-10% cobble to 5", 80% gravel, fine to coarse 10% coarse sand, clasts are subangular to sub rounded, multicolor (water removes fines which account for uniform color), wet strongly cemented	X	70		0.4
	352						
	354			X	71A		1.2
	356			X	71B		
	358		- as sample 70 but abundant clasts of obsidian like material	X			
15:16	360	E04		X	72	2.6 ^{new} /ft	0.4
	362						
	364						
	366			X			
	368						
	370			X			
	372						
	374			X			
	376			X			
	378						
	380			X			
	382						
	384			X			
	386						
	388						
	390						



Integrated Subsurface Evaluation

311 Rock Avenue • Golden, CO 80401

PH 303.526.4432 • FAX 303.526.4426

email: PedlerRAS@aol.com • www.rasinc.org

C-42

COMPANY : US AEC
WELL : C-41
LOCATION/FIELD : TEAD
COUNTY : TOOELE
STATE : UTAH
SECTION :

OTHER SERVICES:

TOWNSHIP :

RANGE :

DATE : 12/08/04
DEPTH DRILLER :
LOG BOTTOM : 355.60
LOG TOP : -0.60

PERMANENT DATUM : GS

KB : NA

LOG MEASURED FROM: GS

DF :

DRL MEASURED FROM: NA

CL : na

CASING DIAMETER : 0
CASING TYPE : PVC
CASING THICKNESS: 0

LOGGING UNIT : 202

FIELD OFFICE :

RECORDED BY : whp

BIT SIZE : 6
MAGNETIC DECL. : 0
MATRIX DENSITY : 2.71
NEUTRON MATRIX : Dolomite

BOREHOLE FLUID : 0

RM : 0

RM TEMPERATURE : 0

MATRIX DELTA T : 140

FILE : PROCESSED

TYPE : 9512A

THRESH: 4000

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



KLEINFELDER

PARSONS

Date:09/23/2005

Project Number 48743.1B

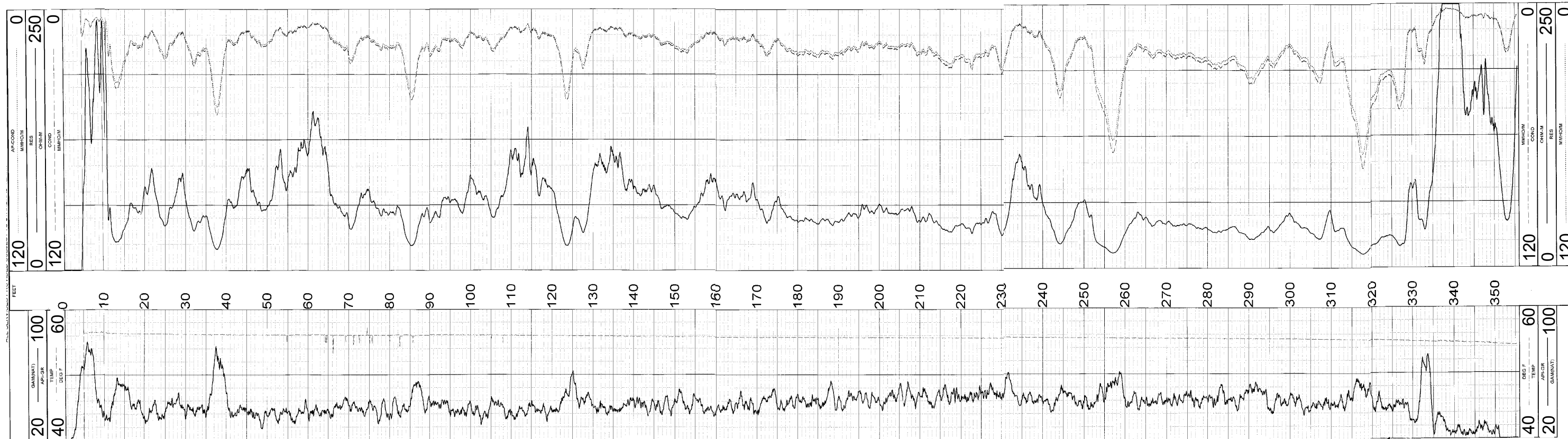
TEAD Phase II RFI

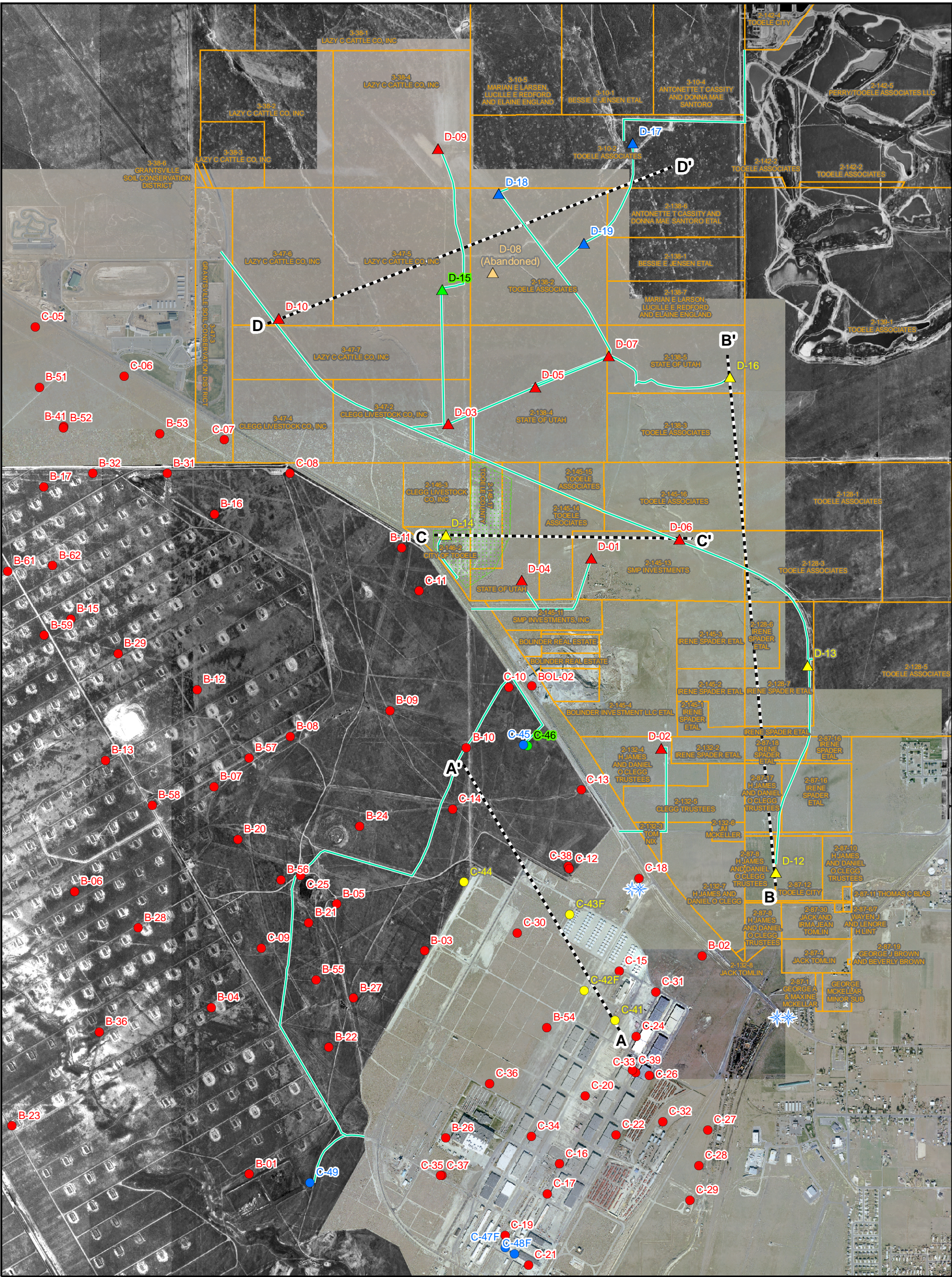
**WELL C-42F
NATURAL GAMMA AND
INDUCTION ELECTRICAL LOGS**

SLC5Q232.ppt

PLATE

C-2a





Offsite Groundwater Monitoring Wells

▲

Phase I RFI Well

▲

Phase I RFI Well - Abandoned

▲

Phase II RFI - Installed Fall-Winter 2004

▲

Phase III RFI - Installed Summer 2005

▲

Proposed Phase II RFI Well

TEAD/UID Groundwater Monitoring Wells

●

Existing Well

●

Phase II RFI Well - Installed Fall-Winter 2004

●

Phase II RFI Well - Installed Summer-Fall 2005

●

Proposed Phase II RFI Well

LEGEND

★

Survey Benchmark

—

Approximate Phase II RFI Well Access Route

Cross Section Line

▨

Former Landfill

▭

Parcel Boundaries / Owners

SWMU 58
PHASE II RFI
TOOELE ARMY DEPOT
TOOELE, UTAH

09001,800

Feet

↑

PLATE C-3

GROUNDWATER
MONITORING WELL
LOCATION MAP



311 Rock Avenue • Golden, CO 80401
PH 303.526.4432 • FAX 303.526.4426

Integrated Subsurface Evaluation email: PedlerRAS@aol.com • www.rasinc.org

C-42F

COMPANY : US AEC
WELL : ~~C-41~~ C-42F
LOCATION/FIELD : TEAD
COUNTY : TOOELE
STATE : UTAH
SECTION :

OTHER SERVICES:

TOWNSHIP : RANGE :

DATE : 12/08/04
DEPTH DRILLER :
LOG BOTTOM : 355.80
LOG TOP : 0.50

PERMANENT DATUM : GS

KB : NA

LOG MEASURED FROM: GS

DF :

DRL MEASURED FROM: NA

CL : na

LOGGING DIAMETER : 0
LOGGING TYPE : PVC
LOGGING THICKNESS: 0

LOGGING UNIT : 202
FIELD OFFICE :
RECORDED BY : whp

BIT SIZE : 6
MAGNETIC DECL. : 0
MATRIX DENSITY : 2.71
NEUTRON MATRIX : Dolomite

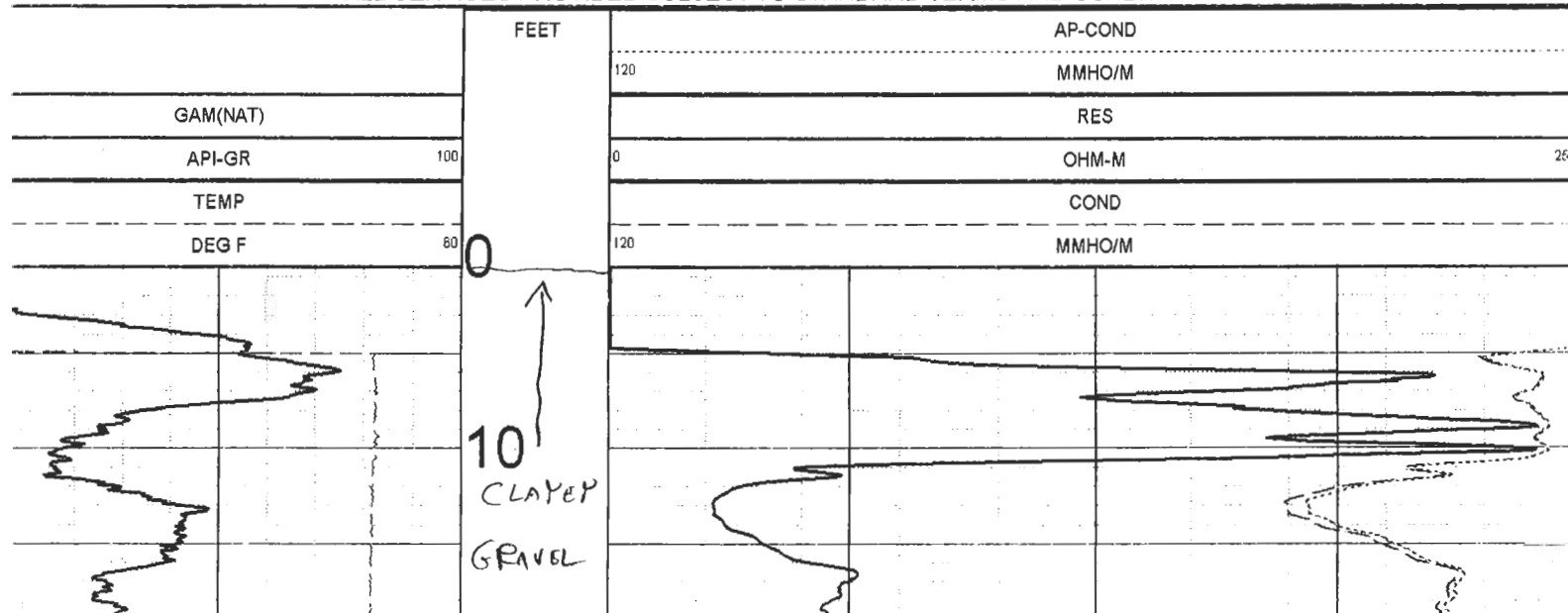
BOREHOLE FLUID : 0
RM : 0
RM TEMPERATURE : 0
MATRIX DELTA T : 140

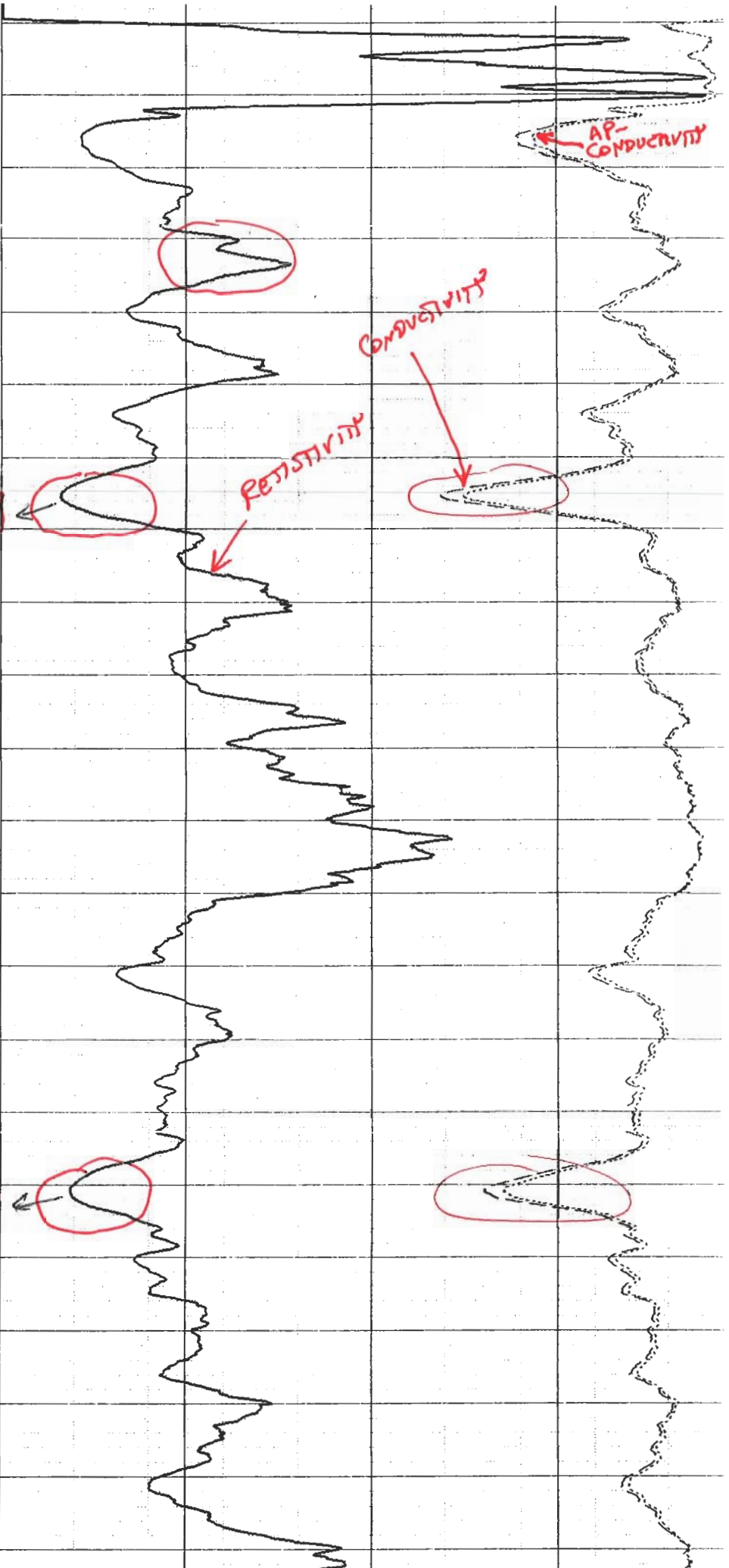
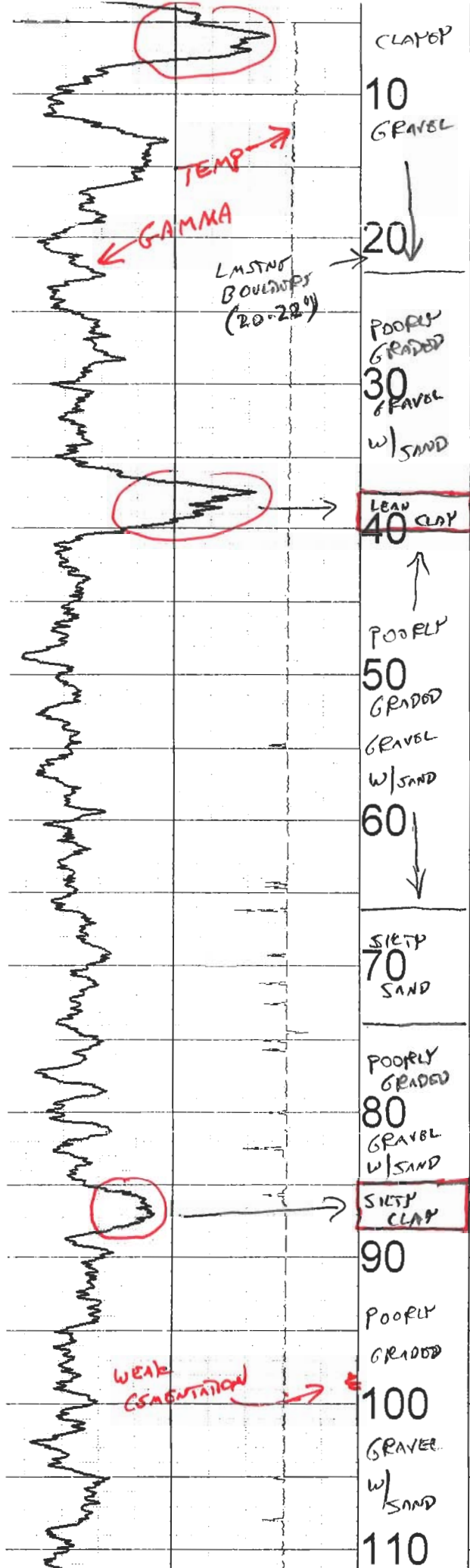
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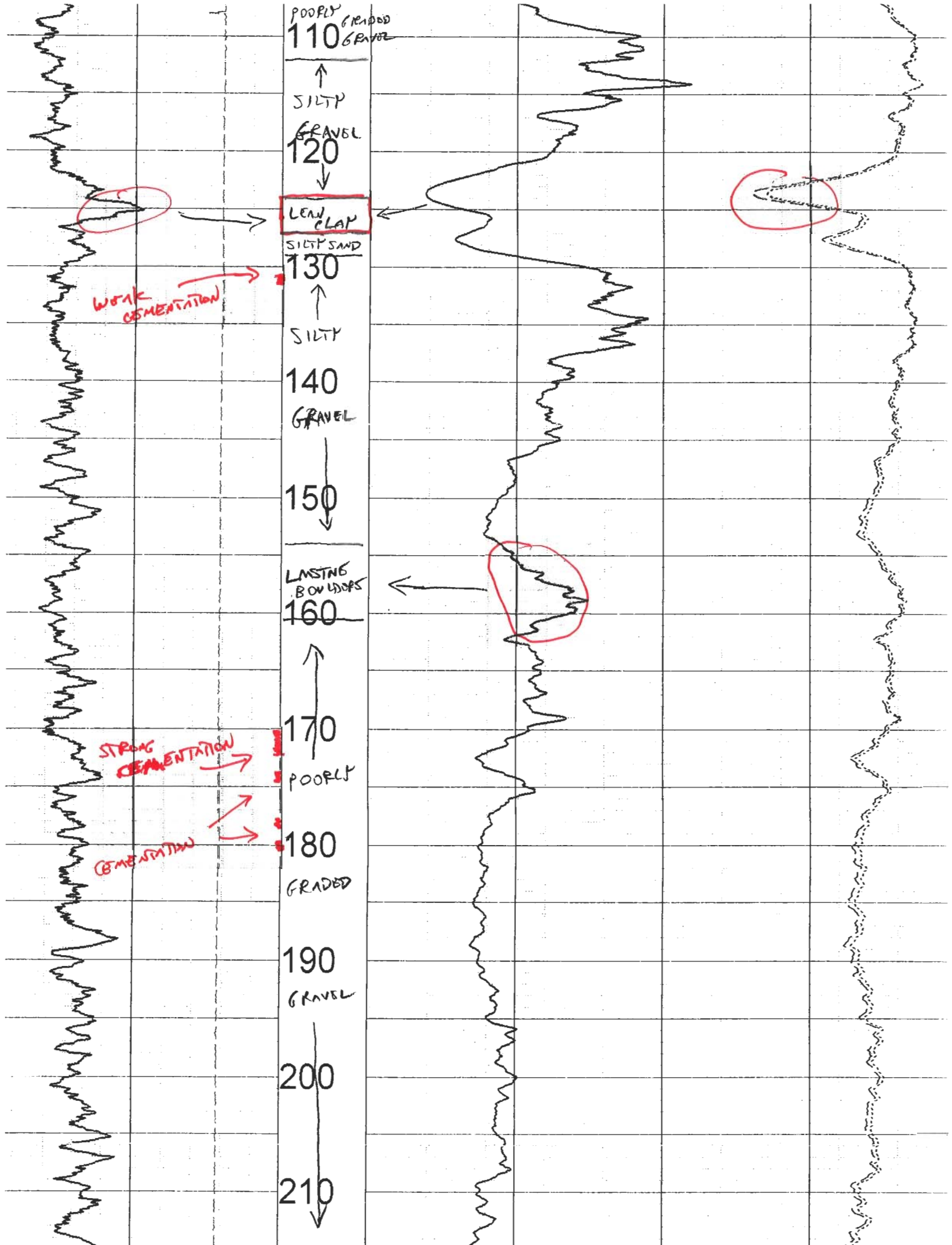
THRESH: 4000

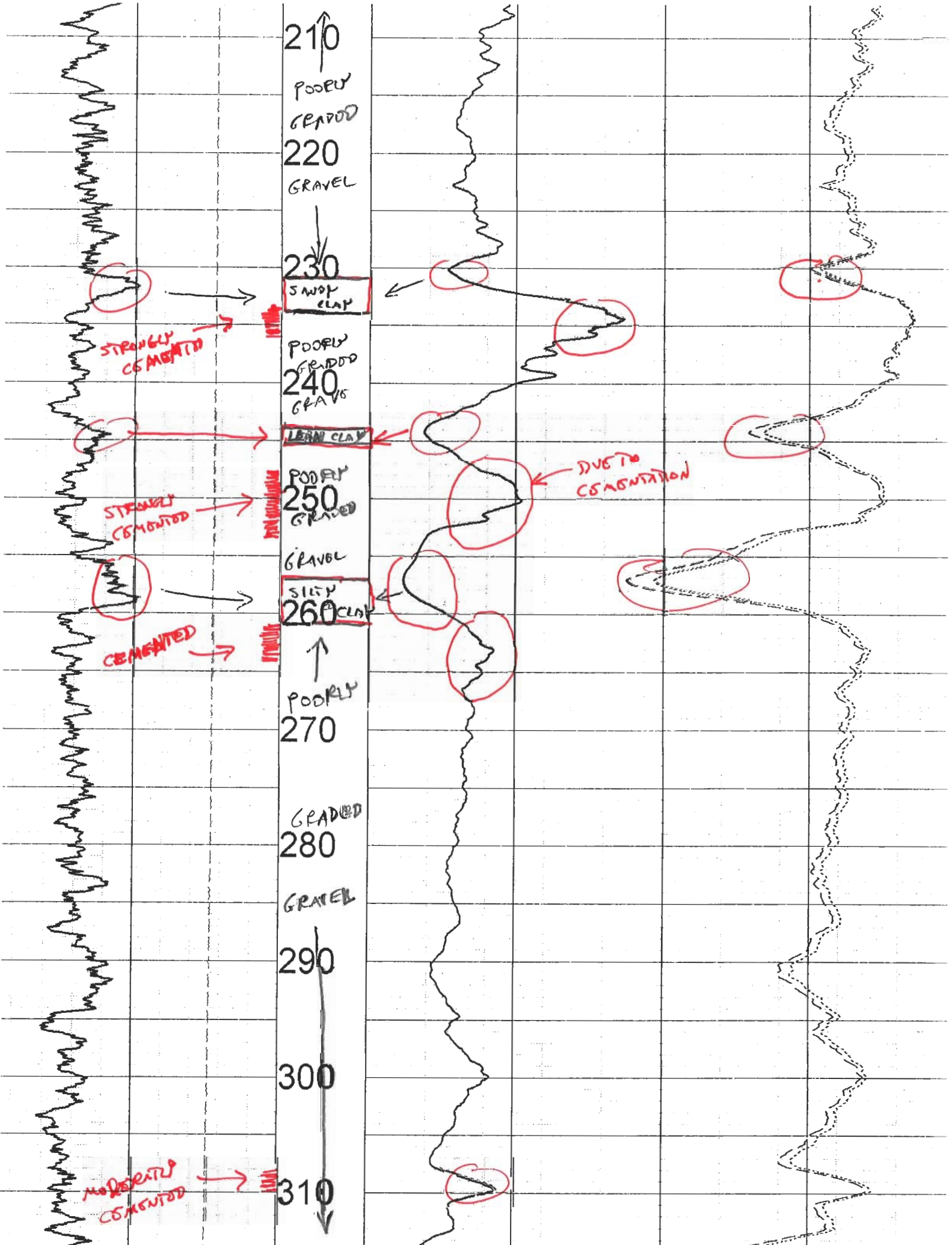
ADDITION OF BOREHOLE GEOLOGY (FROM MATI WVS GEOLOGIC BOREHOLE LOG)
WAS BY R. JIRIK. GEOPHYSICAL LOG INTERPRETATION BY R. JIRIK

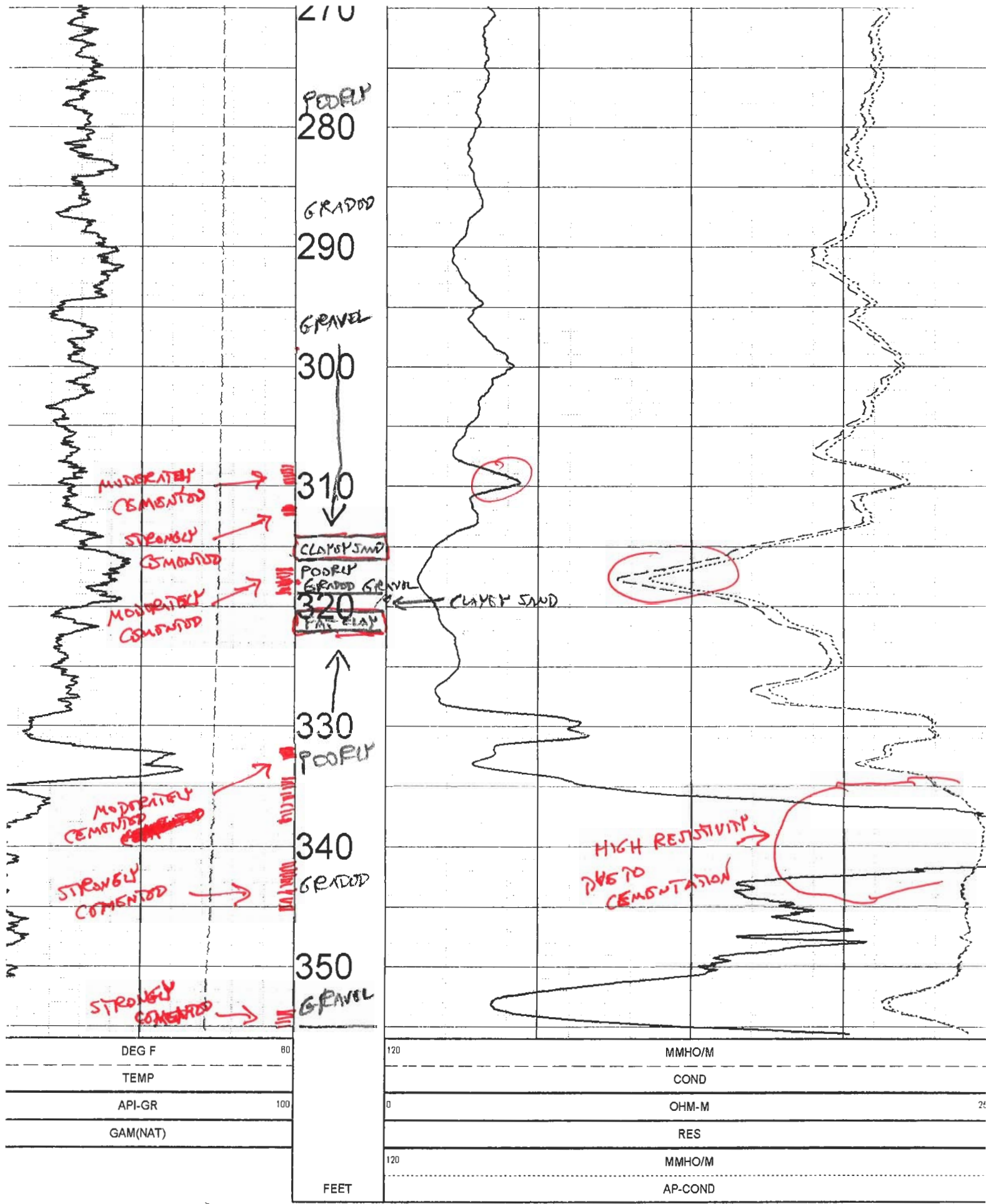
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

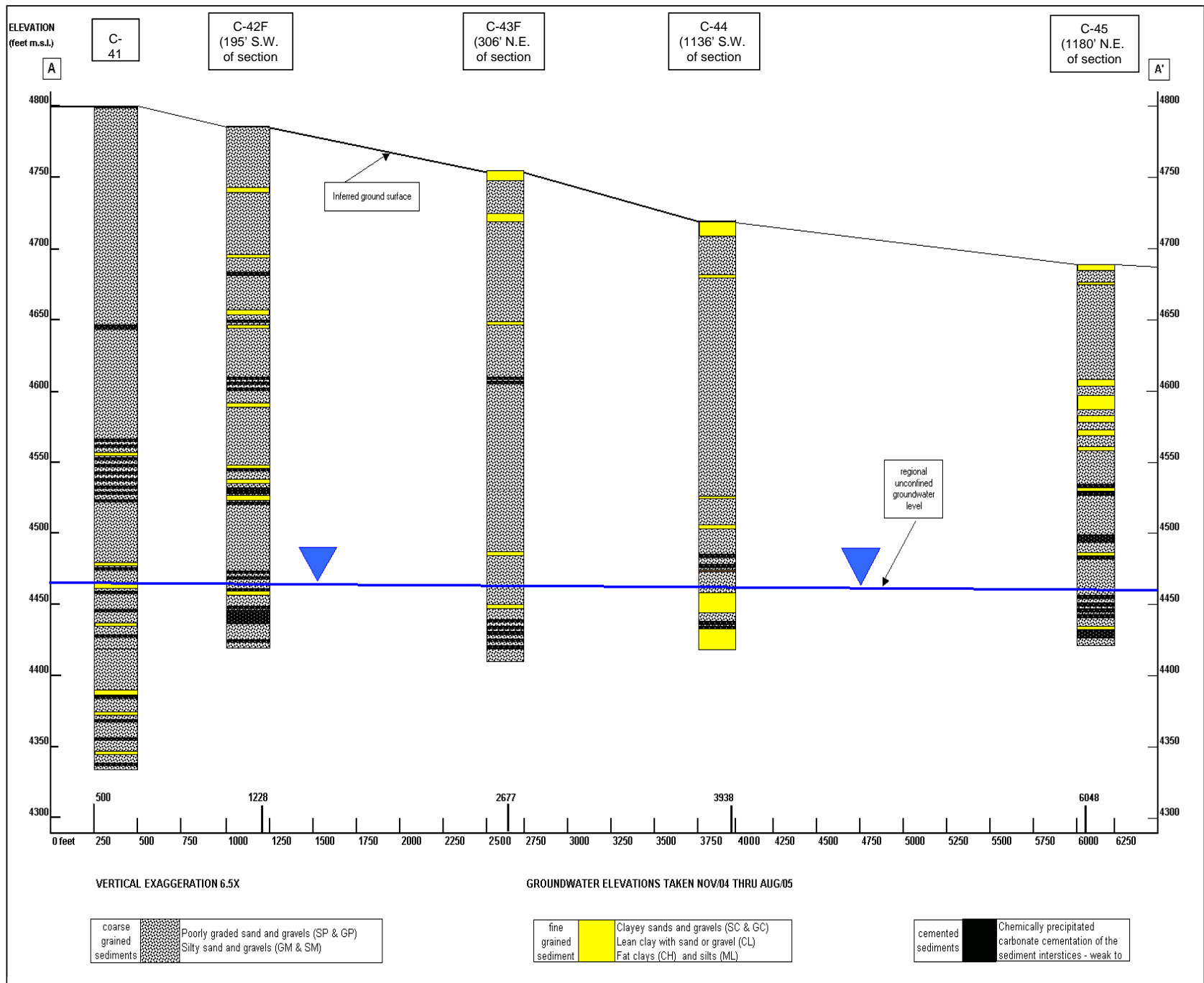












APPENDIX D

CONTRACTOR
Kleinfelder/Parsons

WELL NUMBER
C - 42F

PLATE
D-1

TEAD Phase II RFI - SWMU 58

MONITORING WELL INSTALLATION DATA RECORD

PROJECT : **Phase II RFI - SWMU 58**

LOCATION : **Tooele County, Utah**

DRILLING SUBCONTRACTOR : **Layne Geoconstruction**

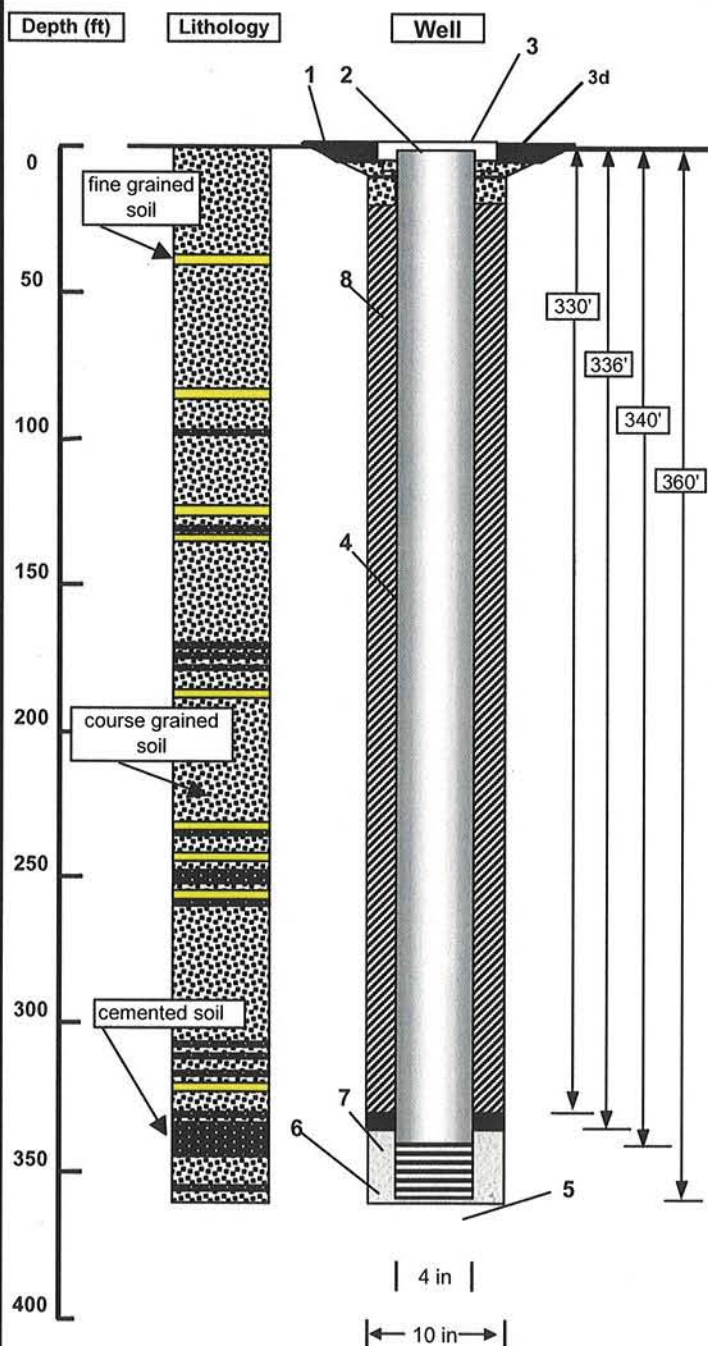
DRILLER: **Tom Kearn**

DRILLING METHOD AND EQUIPMENT: **Becker Hammer-Drill Systems AP1000**

HELPERS: **Nate Salazar, Mike Winmill**

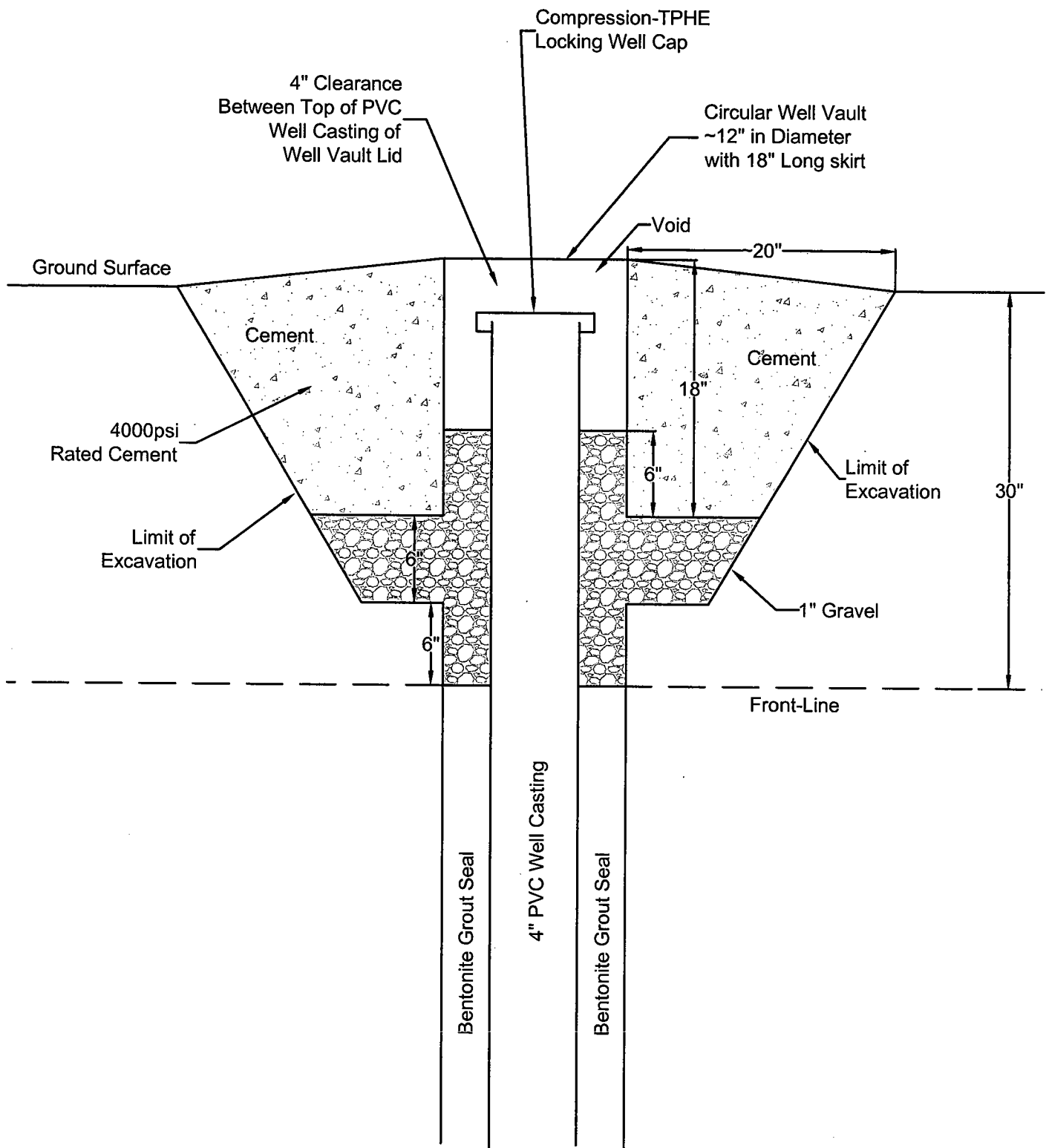
WATER LEVEL : **320.32 ft (TOC) on 11/18/04** START: **11/8/04** END: **11/16/04**

GEOLOGIST **Matt Ivers**



DRAWING NOT TO SCALE

- 1- Ground elevation at well : 4785.525 feet (brass cap)
- 2- Measuring point elevation : 4785.095 feet (top of well casing)
- 3- Surface completion casing :
a) type / diameter (ID/ OD) Steel flush mount -10 inch ID
b) height above ground 6 inches - flush with concrete pad
c) length below ground 18 inches
d) type / quantity of sealant Portland cement / 5 - 92.6 lb bags
e) protective bollards none - identifying C-42F paddle type sign
- 4- Well casing :
a) type / diameter (ID/ OD) Schedule 40 PVC / 4 inch
b) height above ground top of casing 0.18 feet below ground
c) length below ground 360.22 feet
d) type / quantity of sealant see # 8
e) well centralizers none
- 5- Well screen :
a) type / diameter (ID/ OD) Schedule 40 PVC / 4 inch
b) slot size .010 inch
c) lengths 2 - 10 foot sections (340 to 360 feet bgs)
- 6- Well screen filter pack :
a) type #16 / 40 Colorado Silica Sand
b) quantity used 20 - 50 lb bags
c) method of placement poured from surface
d) length 336.5 to 360 feet bgs
- 7- Bentonite seal :
a) type/quantity Cetco coated pellets / 2.5 - 5 gallon buckets
b) length 330.4 to 336.5 feet bgs
- 8- Grout :
a) grout mix used per batch 28 gal water to 2 - 50 lb bags bentonite grout
b) method of placement pumped from surface
c) qty of well casing grout 89 bags (approx 1246 gallons)
- Well development :
a) method bail and swab / pump and back-flush
b) time 3 hour 2 minutes / 3 hours 21 minutes
- Pumping tests :
a) drawdown / time 0.35 feet / 20 minutes
b) pumping rate 7 gpm



SLC5d061.dwg



Date: 02/08/2005
Project Number 48743.1B

TEAD Phase II RFI @ SWMU 58

**FLUSH MOUNT SURFACE COMPLETION
MONITORING WELLS C-42F & C-43F**

FIGURE

D-2

SUMMARY OF WELL SURVEY DATA **TEAD Phase II RFI Groundwater Monitoring Wells**

-----Elevations (ft above MSL)-----							
Well No.	Measuring Point	Brass Cap	Ground Surface	Top of	Bottom of	Measuring Point	
				Well Screen	Well Screen	Northing	Easting
C-41	4804.70	4802.32	4801.67	4445.68	4425.68	7364933.324	1406930.413
C-42F	4785.09	4785.52	4785.27	4445.27	4425.27	7365504.752	1406335.618
C-43F	4754.87	4755.23	4755.21	4436.21	4416.21	7366968.52	1406061.58
C-44	4722.81	4720.44	4719.82	4439.82	4419.82	7367591.88	1404021.61
C-45							
D-12	4803.05	4800.56	4800.25	4455.25	4435.25	7367777.995	1410018.176
D-13	4720.05	4717.40	4720.47	4358.47	4338.47	7371760.079	1410629.706
D-14	4592.80	4590.93	4590.39	4335.39	4315.39	7374264.49	1403669.88
D-16	4580.11	4577.75	4577.20	4346.20	4326.20	7377300.289	1409139.940
D-17							
D-18							
D-19							

MSL: mean sea level

F for selected well identifiers designates flush-mount surface completion.

Coordinates for measuring point are US State plane 1983, Utah Central 4302, NAD 1983 (CONUS), GEO1D96 (continental US)

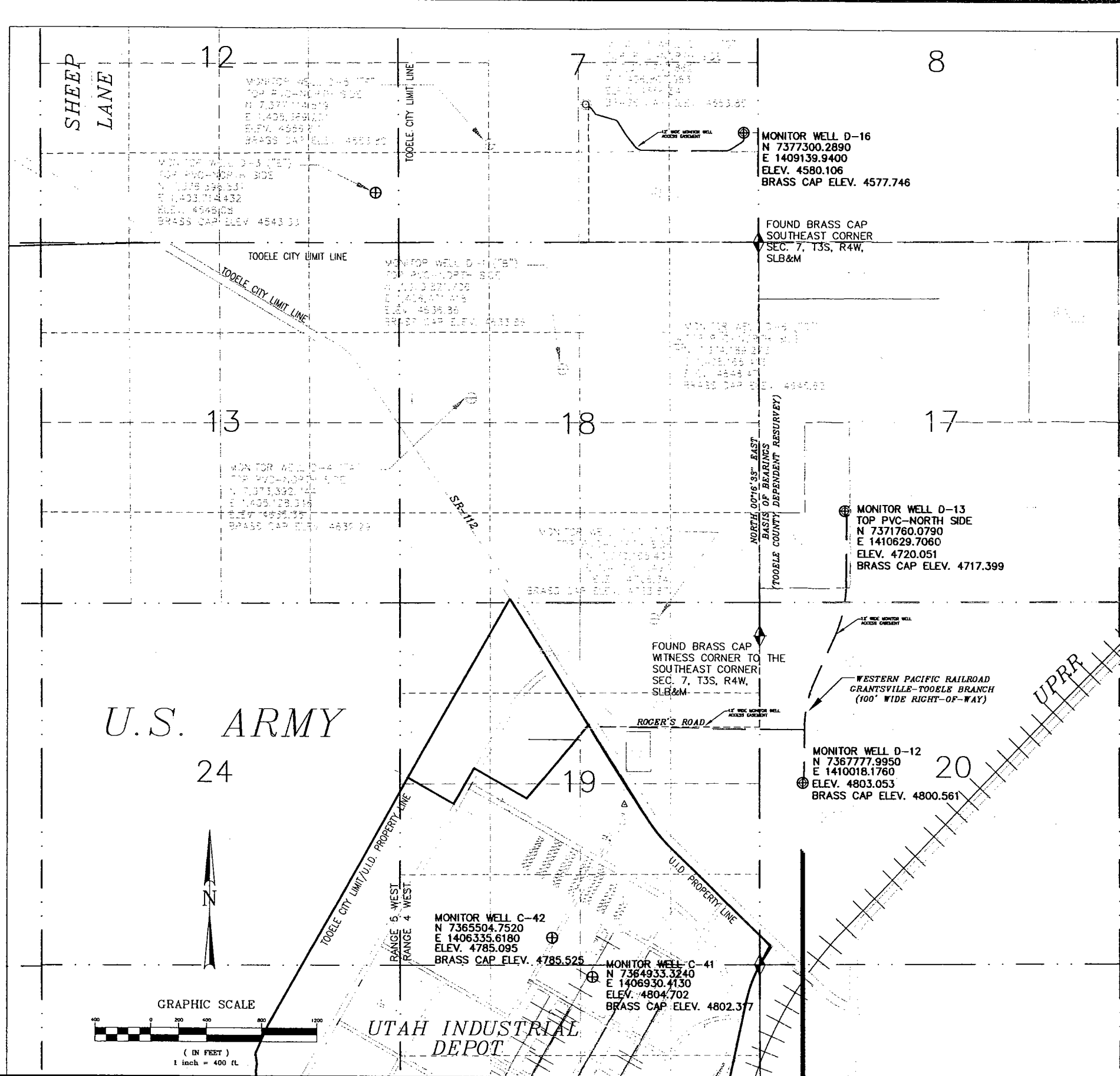
All survey data generated by Ward Engineering of Salt Lake City, Utah

C-45, D-17, D-18, and D-19 have not been surveyed as of 7/21/05.

Legal Description – Monitor Well No. C-42

A fifty foot diameter well easement for the purpose of accessing monitor well No. C-42, the center point of which is described as follows:

Commencing at the South Quarter corner of Section 19, Township 3 South, Range 4 West, Salt Lake Base and Meridian; and running; thence South $89^{\circ}43'47''$ West along the south line of the Southwest Quarter of said Section 19, a distance of 414.76 feet; thence North $00^{\circ}16'13''$ West, a distance of 400.46 feet to the center point of a PVC pipe marking Monitor Well No. C-42, and point of terminus.



UTAH INDUSTRIAL DEPOT MONITOR WELL AND ACCESS EASEMENT LEGAL DESCRIPTIONS

LEGAL DESCRIPTION - MONITOR WELL NO. C-41
COMMENCING AT THE NORTH QUARTER CORNER OF SECTION 30, TOWNSHIP 3 SOUTH, RANGE 4 WEST, SALT LAKE BASE AND MERIDIAN; AND RUNNING THENCE: THENCE NORTH 89°40'33" EAST ALONG THE NORTH LINE OF THE NORTHEAST QUARTER OF SAID SECTION 30, A DISTANCE OF 177.34 FEET; THENCE SOUTH 00°19'27" EAST, A DISTANCE OF 174.07 FEET TO THE CENTER POINT OF A PVC PIPE MARKING MONITOR WELL NO. C-41, AND POINT OF TERMINUS.

LEGAL DESCRIPTION - MONITOR WELL NO. C-42
COMMENCING AT THE SOUTH QUARTER CORNER OF SECTION 19, TOWNSHIP 3 SOUTH, RANGE 4 WEST, SALT LAKE BASE AND MERIDIAN; AND RUNNING THENCE: THENCE SOUTH 89°43'47" WEST ALONG THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 19, A DISTANCE OF 414.76 FEET; THENCE NORTH 00°16'13" WEST, A DISTANCE OF 400.46 FEET TO THE CENTER POINT OF A PVC PIPE MARKING MONITOR WELL NO. C-42, AND POINT OF TERMINUS.

LEGAL DESCRIPTION - MONITOR WELL NO. D-12
A FIFTY FOOT DIAMETER WELL EASEMENT FOR THE PURPOSE OF ACCESSING MONITOR WELL NO. D-12, THE CENTER POINT OF WHICH IS DESCRIBED AS FOLLOWS:
COMMENCING AT THE WEST QUARTER CORNER OF SECTION 20, TOWNSHIP 3 SOUTH, RANGE 4 WEST, SALT LAKE BASE AND MERIDIAN; AND RUNNING THENCE: THENCE NORTH 00°05'27" WEST ALONG THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 20, A DISTANCE OF 12.32 FEET; THENCE NORTH 89°54'33" EAST, A DISTANCE OF 627.80 FEET TO THE CENTER POINT OF A PVC PIPE MARKING MONITOR WELL NO. D-12, AND POINT OF TERMINUS.

WELL NO. D-12 - ACCESS EASEMENT LEGAL DESCRIPTION
A TWELVE (12) FOOT WIDE ACCESS EASEMENT FOR THE PURPOSE OF ACCESSING MONITOR WELL NO. D-12 FROM A PUBLIC HIGHWAY, THE CENTERLINE OF WHICH IS DESCRIBED AS FOLLOWS:
BEGINNING AT A POINT WHICH LIES SOUTH 00°00'42" EAST ALONG THE EAST LINE OF SECTION 19, TOWNSHIP 3 SOUTH, RANGE 4 WEST, SALT LAKE BASE AND MERIDIAN, A DISTANCE OF 1,332.55 FEET, AND SOUTH 89°54'33" WEST, A DISTANCE OF 2,346.78 FEET FROM A WITNESS CORNER TO THE NORTHEAST CORNER OF SAID SECTION 19, SAID POINT BEING ON THE EASTERLY RIGHT-OF-WAY LINE OF STATE ROUTE 112; AND RUNNING THENCE OVER AND ACROSS A PRESCRIPTIVE RIGHT-OF-WAY FOR ROGER'S ROAD THE FOLLOWING THREE (3) COURSES: SOUTH 89°11'52" EAST, A DISTANCE OF 1,865.02 FEET; THENCE SOUTH 89°49'44" EAST, A DISTANCE OF 766.25 FEET; THENCE SOUTH 89°13'27" EAST, A DISTANCE OF 371.00 FEET TO A POINT ON A DIRT ROAD WITHIN THE 100' WIDE RIGHT-OF-WAY OF THE WESTERN PACIFIC RAILROAD-GRANTSVILLE TOOELE BRANCH, ON FILE WITH THE TOOELE COUNTY RECORDER'S OFFICE, DATED MAY, 1917; THENCE SOUTH 00°41'04" WEST ALONG SAID DIRT ROAD, A DISTANCE OF 727.17 FEET TO A POINT ON THE PERIMETER OF THE FIFTY FOOT MONITOR WELL EASEMENT AND POINT OF TERMINUS.

LEGAL DESCRIPTION - MONITOR WELL NO. D-13
A FIFTY FOOT DIAMETER WELL EASEMENT FOR THE PURPOSE OF ACCESSING MONITOR WELL NO. D-13, THE CENTER POINT OF WHICH IS DESCRIBED AS FOLLOWS:
COMMENCING AT THE SOUTHWEST CORNER OF SECTION 17, TOWNSHIP 3 SOUTH, RANGE 4 WEST, SALT LAKE BASE AND MERIDIAN; AND RUNNING THENCE NORTH 00°16'57" WEST ALONG THE WEST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION, A DISTANCE OF 1,341.40 FEET; THENCE NORTH 89°43'03" EAST, A DISTANCE OF 1,250.17 FEET TO THE CENTER POINT OF A PVC PIPE MARKING MONITOR WELL NO. D-13, AND POINT OF TERMINUS.

WELL NO. D-13 - ACCESS EASEMENT LEGAL DESCRIPTION
A TWELVE (12) FOOT WIDE ACCESS EASEMENT FOR THE PURPOSE OF ACCESSING MONITOR WELL NO. D-13 FROM A PUBLIC HIGHWAY, THE CENTERLINE OF WHICH IS DESCRIBED AS FOLLOWS:
BEGINNING AT A POINT WHICH LIES SOUTH 00°00'42" EAST ALONG THE EAST LINE OF SECTION 19, TOWNSHIP 3 SOUTH, RANGE 4 WEST, SALT LAKE BASE AND MERIDIAN, A DISTANCE OF 1,332.55 FEET, AND SOUTH 89°54'33" WEST, A DISTANCE OF 2,346.78 FEET FROM A WITNESS CORNER TO THE NORTHEAST CORNER OF SAID SECTION 19, SAID POINT BEING ON THE EASTERLY RIGHT-OF-WAY LINE OF STATE ROUTE 112; AND RUNNING THENCE OVER AND ACROSS A PRESCRIPTIVE RIGHT-OF-WAY FOR ROGER'S ROAD THE FOLLOWING THREE (3) COURSES: SOUTH 89°11'52" EAST, A DISTANCE OF 1,865.02 FEET; THENCE SOUTH 89°49'44" EAST, A DISTANCE OF 766.25 FEET; THENCE SOUTH 89°13'27" EAST, A DISTANCE OF 371.00 FEET TO A POINT ON A DIRT ROAD WITHIN THE 100' WIDE RIGHT-OF-WAY OF THE WESTERN PACIFIC RAILROAD-GRANTSVILLE TOOELE BRANCH, ON FILE WITH THE TOOELE COUNTY RECORDER'S OFFICE, DATED MAY, 1917 AND POINT OF CURVE OF A NON TANGENT CURVE TO THE RIGHT, OF WHICH THE RADIUS POINT LIES NORTH 88°31'02" EAST, A RADIAL DISTANCE OF 1,595.37 FEET; THENCE ALONG SAID DIRT ROAD THE FOLLOWING FOUR (4) COURSES: NORTHERLY ALONG THE ARC, THROUGH A CENTRAL ANGLE OF 26°12'16", A DISTANCE OF 729.65 FEET (CHORD BEARS NORTH 11°37'10" EAST, A DISTANCE OF 723.30 FEET); THENCE NORTH 24°11'57" EAST, A DISTANCE OF 713.62 FEET TO THE POINT OF CURVE OF A NON TANGENT CURVE TO THE LEFT, OF WHICH THE RADIUS POINT LIES NORTH 65°41'00" WEST, A RADIAL DISTANCE OF 1,902.79 FEET; THENCE NORTHERLY ALONG THE ARC, THROUGH A CENTRAL ANGLE OF 26°01'18", A DISTANCE OF 864.18 FEET (CHORD BEARS NORTH 11°18'21" EAST, A DISTANCE OF 856.77 FEET); THENCE NORTH 00°20'22" EAST, A DISTANCE OF 965.79 FEET TO A POINT ON THE PERIMETER OF THE FIFTY FOOT MONITOR WELL EASEMENT AND POINT OF TERMINUS.

LEGAL DESCRIPTIONS (CONT'D)
LEGAL DESCRIPTION - MONITOR WELL NO. D-16
A FIFTY FOOT DIAMETER WELL EASEMENT FOR THE PURPOSE OF ACCESSING MONITOR WELL NO. D-16, THE CENTER POINT OF WHICH IS DESCRIBED AS FOLLOWS:
COMMENCING AT THE SOUTHEAST CORNER OF SECTION 7, TOWNSHIP 3 SOUTH, RANGE 4 WEST, SALT LAKE BASE AND MERIDIAN; AND RUNNING THENCE NORTH 00°21'59" WEST ALONG THE EAST LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 7, A DISTANCE OF 1,609.58 FEET; THENCE SOUTH 89°38'01" WEST, A DISTANCE OF 210.45 FEET TO THE CENTER POINT OF A PVC PIPE MARKING MONITOR WELL NO. D-16, AND POINT OF TERMINUS.

WELL NO. D-16 - ACCESS EASEMENT LEGAL DESCRIPTION
A TWELVE (12) FOOT WIDE ACCESS EASEMENT FOR THE PURPOSE OF ACCESSING MONITOR WELL NO. D-16 FROM MONITOR WELL NO. D-7, THE CENTERLINE OF WHICH IS DESCRIBED AS FOLLOWS:
BEGINNING AT A POINT WHICH LIES 89°42'03" WEST ALONG THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 7, TOWNSHIP 3 SOUTH, RANGE 4 WEST, SALT LAKE BASE AND MERIDIAN, A DISTANCE OF 2,501.20 FEET; AND NORTH 00°17'59" WEST, A DISTANCE OF 1,995.93 FEET FROM THE SOUTHEAST CORNER OF SAID SECTION 7, SAID POINT BEING THE BEGINNING OF A CURVE TO THE RIGHT, OF WHICH THE RADIUS POINT LIES SOUTH 25°32'41" WEST, A RADIAL DISTANCE OF 150.00 FEET; AND RUNNING THENCE SOUTHEASTERLY ALONG THE ARC, THROUGH A CENTRAL ANGLE OF 25°51'49", A DISTANCE OF 67.71 FEET; THENCE SOUTH 35°59'57" EAST, A DISTANCE OF 76.49 FEET TO A POINT OF CURVE TO THE LEFT HAVING A RADIUS OF 50.00 FEET AND A CENTRAL ANGLE OF 37°52'57"; THENCE SOUTHEASTERLY ALONG THE ARC A DISTANCE OF 33.06 FEET; THENCE SOUTH 73°52'54" EAST, A DISTANCE OF 289.60 FEET TO A POINT OF CURVE TO THE RIGHT HAVING A RADIUS OF 50.00 FEET AND A CENTRAL ANGLE OF 42°17'33"; THENCE SOUTHEASTERLY ALONG THE ARC A DISTANCE OF 36.91 FEET; THENCE SOUTH 31°35'21" EAST, A DISTANCE OF 215.71 FEET; THENCE SOUTH 37°38'09" EAST, A DISTANCE OF 227.09 FEET TO A POINT OF CURVE TO THE LEFT HAVING A RADIUS OF 150.00 FEET AND A CENTRAL ANGLE OF 52°23'01"; THENCE SOUTHEASTERLY ALONG THE ARC A DISTANCE OF 137.14 FEET; THENCE NORTH 89°58'50" EAST, A DISTANCE OF 1,218.55 FEET TO A POINT OF CURVE TO THE LEFT HAVING A RADIUS OF 150.00 FEET AND A CENTRAL ANGLE OF 32°46'33"; THENCE EASTERLY ALONG THE ARC A DISTANCE OF 85.81 FEET; THENCE NORTH 57°12'17" EAST, A DISTANCE OF 201.46 FEET TO A POINT OF CURVE TO THE LEFT HAVING A RADIUS OF 50.00 FEET AND A CENTRAL ANGLE OF 52°33'46"; THENCE NORTHEASTERLY ALONG THE ARC A DISTANCE OF 45.87 FEET; THENCE NORTH 04°38'31" EAST, A DISTANCE OF 47.80 FEET TO A POINT ON THE PERIMETER OF THE FIFTY FOOT MONITOR WELL EASEMENT AND POINT OF TERMINUS.

THE BASIS OF BEARINGS FOR THIS SURVEY IS NORTH 00°16'33" EAST BETWEEN THE FOUND WITNESS CORNER MONUMENT FOR THE NORTHEAST CORNER OF SECTION 19, TOWNSHIP 3 SOUTH, RANGE 4 WEST, SALT LAKE BASE AND MERIDIAN, AND THE FOUND MONUMENT FOR THE SOUTHEAST CORNER OF SECTION 7, TOWNSHIP 3 SOUTH, RANGE 4 WEST, SALT LAKE BASE AND MERIDIAN.

NARRATIVE OF BOUNDARY:
THE PURPOSE OF THIS SURVEY MAP IS TO SHOW THE LOCATIONS OF FIVE MONITOR WELLS AND ACCESS ROUTES TO THE THREE "D" SERIES WELLS. COORDINATES FOR THE WELL LOCATIONS HAVE BEEN FURNISHED IN THE NAD 27 STATE PLANE CENTRAL ZONE. ELEVATIONS ARE ON THE NGVD 29 SYSTEM.

BASIS OF BEARINGS:
THE BASIS OF BEARINGS FOR THIS SURVEY IS NORTH 00°16'33" EAST BETWEEN THE FOUND WITNESS CORNER MONUMENT FOR THE NORTHEAST CORNER OF SECTION 19, TOWNSHIP 3 SOUTH, RANGE 4 WEST, SALT LAKE BASE AND MERIDIAN, AND THE FOUND MONUMENT FOR THE SOUTHEAST CORNER OF SECTION 7, TOWNSHIP 3 SOUTH, RANGE 4 WEST, SALT LAKE BASE AND MERIDIAN.

SURVEYOR'S CERTIFICATE:
I, ROBERT O. BAKER DO HEREBY CERTIFY THAT I AM A REGISTERED LAND SURVEYOR LICENSED TO PRACTICE IN THE STATE OF UTAH, AND THAT I HOLD LICENSE NO. 172816. I FURTHER CERTIFY THAT I HAVE MADE A SURVEY OF THE PARCEL OF LAND SHOWN ON THIS MAP. THAT THE SURVEY WAS CONDUCTED USING GENERALLY ACCEPTED SURVEYING PRACTICES. IT DOES NOT PURPORT TO SHOW ALL EASEMENTS OF RECORD, NOR IS IT PROOF OF OWNERSHIP.

ROBERT O. BAKER
UTAH REGISTERED LAND SURVEYOR
LICENSE NO. 172816

REVISIONS				
No.	DATE	BY	REVISION	

DRAWN BY: HU
DESIGN BY: HU
CHECKED BY: ROB
DATE: 12-10-05

CLIENT: PARSONS
DWG: MONITOR WELL-2004.dwg
JOB No: PARSON 04
DRAWING IS REDUCED IF LESS THAN 22"x34"
DIMENSIONS AND NOTES TAKE PRECEDENCE OVER SCALE.

Ward Engineering Group
Planning • Engineering • Surveying
Salt Lake City Office
1370 S. West Temple
Salt Lake City, Utah 84115
tel (801) 487-8040
fax (801) 487-8668

RECORD OF SURVEY

LOCATED IN PARTS OF SECTION 7, 17, 19, 20, and 30
TOWNSHIP 3 SOUTH, RANGE 4 WEST,
SALT LAKE BASE AND MERIDIAN,
TOOELE, UTAH.

SHEET:
1 OF 1

APPENDIX E



**TOOELE ARMY DEPOT
MONITORING WELL SAMPLING DATA**

Well ID: <u>C-42</u>	Initial Depth to Water: <u>320.32</u>
Sample ID:	Total Depth of Well: <u>360.65</u>
Duplicate ID:	Well Diameter: <u>4"</u>
Sample Depth:	(a) 1 Casing Volume:
Date: <u>11/18/04</u>	(b) 1 Filter Pack Water Volume:
Sampled By: <u>[Signature]</u>	(a) + (b) x 3 = Minimum Volume to Purge:
Method of Sampling: <u>Development 4" Bailer</u>	Method of Purging: <u>Development 4" Bailer</u>

Time	Intake depth	Rate (gpm)	Cum. vol. (gal)	Temp (°F)	pH (units)	Conductivity (µS/cm)	Turbidity (NTUs)	TDS (g/L)	DO (mg/L)	ORP (mv)	Salinity (ppt)	Color & Sediment
2936	1st	Bailer*	3	52.9	7.48	925	>1000					Dark Tan Fine
008	10th	Bailer	30	58.3	7.62	977	>1000					Tan Fine
052	20th	Bailer	60	56.4	7.65	955	>1000					Tan Fine
056	Surging well	w/surge	Block									
158	30th	Bailer	90	62.1	7.64	1031	>1000					Tan Fine
158	Surging well	w/surge	Block		7.57	1071	>1000	54				
238	35th	Bailer	105	65.0	7.57	1071	>1000					Tan none

pH Calibration (select two)				Conductivity Meter Calibration		Turbidimeter Calibration	
Buffer solution	pH 4.0	pH 7.0	pH 10.0	Solution	991	Standard	5.39
Instrument reading		7.0	10.0	Instrument reading	991	Instrument reading	5.39
		0908	0912		0915		0918

Notes: * Bailer holds 399 l



**TOOELE ARMY DEPOT
MONITORING WELL SAMPLING DATA**

Well ID: <u>C-42</u>	Initial Depth to Water: <u>320.32</u>
Sample ID:	Total Depth of Well: <u>360.65</u>
Duplicate ID:	Well Diameter: <u>4"</u>
Sample Depth:	(a) 1 Casing Volume: <u>27 gal</u>
Date: <u>11/18/04</u>	(b) 1 Filter Pack Water Volume:
Sampled By: <u>gnt</u>	(a) + (b) x 3 = Minimum Volume to Purge: <u>81 gal</u>
Method of Sampling: <u>Development 4" submersible</u>	Method of Purging: <u>Development 4" submersible</u>

Time	Intake depth	Rate (gpm)	Cum. vol. (gal)	Temp (°F)	pH (units)	Conductivity (µS/cm)	Turbidity (NTUs)	TDS (g/L)	DO (mg/L)	ORP (mv)	Salinity (ppt)	Color & Sediment
1403	357	7.14	0									
1415	357	7.26	84	65.5	7.52	1087	63.7					cloudy none
1427	357	7.01	168	64.6	7.50	1045	42.7					cloudy none
1439	357	7.01	252	62.2	7.51	906	33.9					cloudy none
1451	357	7.01	336	62.1	7.49	916	24.8					clear none
1452	Pump	off	Backflush	head	5x							
516	Parameters after		Backflush	60.8	7.50	910	119					cloudy none
1528	357	7.01	420	58.7	7.51	880	33.1					clear none
540	357	7.14	504	57.0	7.48	874	20.5					clear none

pH Calibration (select two)				Conductivity Meter Calibration		Turbidimeter Calibration	
Buffer solution	pH 4.0	pH 7.0	pH 10.0	Solution		Standard	
Instrument reading				Instrument reading		Instrument reading	

Notes:



**TOOELE ARMY DEPOT
MONITORING WELL SAMPLING DATA**

Well ID: <u>C-42</u>	Initial Depth to Water: <u>320.32</u>
Sample ID:	Total Depth of Well: <u>360.65</u>
Duplicate ID:	Well Diameter: <u>4"</u>
Sample Depth:	(a) 1 Casing Volume: <u>27 ggal</u>
Date: <u>11/19/04</u>	(b) 1 Filter Pack Water Volume:
Sampled By: <u>not</u>	(a) + (b) x 3 = Minimum Volume to Purge: <u>81 ggal</u>
Method of Sampling: <u>Development 4" Submersible</u>	Method of Purging: <u>Development 4" Submersible</u>

Time	Intake depth	Rate (gpm)	Cum. vol. (gal)	Temp (°F)	pH (units)	Conductivity (µS/cm)	Turbidity (NTUs)	TDS (g/L)	DO (mg/L)	ORP (mv)	Salinity (ppt)	Color & Sediment
0828	357	0	504	Continued	From yesterday							
0840	357	7.14	588	47.0	7.38	923	4.55					Clear none
0841	Pump off	Backflush	105	45.1								
0900	Prism	105 after backflush	50.2	7.43	969	12.4						Cloudy none
0912	357	7.01	672	50.7	7.43	971	33.7					Cloudy none
0924	357	7.14	756	50.8	7.47	966	19.0					Clear none
0936	357	7.14	840	51.1	7.49	975	11.4					Clear none
0948	357	7.01	924	51.3	7.45	970	4.91					Clear none
1000	357	7.01	1,008	51.3	7.47	965	3.33					Clear none
012	357	7.14	1,092	51.0	7.47	962	1.71					Clear none

pH Calibration (select two)				Conductivity Meter Calibration		Turbidimeter Calibration	
Buffer solution	pH 4.0	pH 7.0	pH 10.0	Solution	991	Standard	5.39
Instrument reading		7.0	10.0	Instrument reading	991	Instrument reading	5.39
		0810	0813		0817		0820

Notes:

Thursday November 18, 2004

Weather: Clear, Cool ~40°

Wind: None

0834 Arrive at C-42 and Start Set up
SWL 320.32' TO 360.65'

0906 Calibrated Equipment

0936 1st Bailer removed, Parameters Taken

1008 10th Bailer removed, Parameters Taken

1052 20th Baile removed, Parameters Taken

1056 Surging well w/ surge Block

1154 30th Bailer removed, Parameters Taken

1158 Surging well w/ surge Block

1238 35th Bailer removed, Parameters Taken

1251 Lowering pump and piping

1400 Pump on establishing Flow

1403 Flow established at 7 gpm, Intake ~357 ft

1452 Pump off, Backflushed well 5x

1540 Pump off for Today, will continue tomorrow
Turbidity at 20.5 NTU's, all other parameters stable

1546 Clean up site and Break down equipment

1628 Leaving C-42 → 90 day yard

1638 Arrive at 90 day yard offloading ~600 gal
of Development water.

1703 Leaving 90 day yard to GWTP

JAA

Friday November 19, 2004

Weather: Clear, Cold $\sim 40^{\circ}$

Wind: None

- 0804 Arrive at C-42 and start Setup
- 0809 Calibrated Equipment
- 0825 Pump on, establishing Flow
- 0828 Flow established at 7 gpm, Intake 357'
- 0841 Pump off, Backflushed 5x
- 1012 Parameters stable, Turbidity at 1.71 NTU's,
Pump off
- 1020 Removing pump and piping
- 1102 Decon Equipment
- 1255 Leaving C-42 \rightarrow 90 day yard
- 1310 Arrive at 90 day yard offloading ~ 500 gal
of purge water
- 1334 Leaving 90 day yard \rightarrow GWP

APPENDIX F

60

Monday December 20, 2004

Weather: Fog, Cold ~ 30°

Wind: None

1023 Arrive at C-44 and installing 3 samplers
at 283', 293' and 303'. SWL 262.08'

1057 Leaving C-44 → C-43

1108 Arrive at C-43 and installing 3 samplers
at 319', 329' and 339'. SWL 293.59'

1128 Leaving C-43 → C-42.

1141 Arrive at C-42 and installing 4 samplers
at 340', (2) 350' (ms/mso) and 360'. SWL 318.92'

1208 Leaving C-42 → C-41

Arrive at C-41 and installing 4 samplers
at (2) 358' (Duplicates), 368' and 378'. SWL 337.86'

Monday January 3, 2005

Weather: Cloudy, Cool ~ 40°

Wind: None

0902 Arrive at C-41 and preparing to Sample

0928 Removing Samplers

12 VOA'S Taken, 40 mL w/HCL

0934 (3) C-41GW001 (358')

(1000) (3) C-41FD001 (358')

0946 (3) C-41GW002 (368')

0952 (3) C-41GW003 (378')

1005 Leaving C-41 → C-42

1008 Arrive at C-42 and preparing to Sample

1033 Removing Samplers

15 VOA'S Taken, 40 mL w/HCL

1036 (3) C-42F-GW001 (340')

1042 (3) C-42F-GW002 (350')

1042 (3) C-42F-GW003 (350')

1042 (3) C-42F-SD002 (350')

1052 (3) C-42F-GW003 (360')

1109 Leaving C-42F → C-43F

1112 Arrive at C-43F and preparing to Sample

1132 Removing Samplers

11 VOA'S Taken, 40 mL w/HCL

1137 (3) C-43FGW001 (319')

1137 (2) C-43FFR001 (319')

1144 (3) C-43FGW002 (329')

1150 (3) C-43FGW003 (339')

1209 Leaving C-43F → C-44

1220 Arrive at C-44 and preparing to Sample

1234 Removing Samplers

39 VOA'S Taken, 40 mL w/HCL

1238 (3) C-44GW001 (283')

1243 (3) C-44GW002 (293')

62

Cont 1/3/05

1248 (3) C-44/GW003 (303')

1258 Leaving C-44 → Parson's field office

1311 Arrive at Field office, delivered samples
spoke w/ Jeff Bigelow and confirmed receipt
of samples.

ANALYTICAL QUALITY CONTROL SUMMARY

Samples were collected in accordance with the analytical and quality control specifications of the Final Phase II RCRA Facility Investigation SWMU-58 Work Plan (Parsons, 2003). Passive diffusion bag samplers were deployed in wells C-41, C-42, C-43, and C-44 on the same day. Samples (including field quality control samples) were collected on the 3rd of January 2005 and submitted to Ecology and Environment Analytical Service Center, a Utah and USACE-certified analytical laboratory.

Results were received and submitted to third party data review by Synectics. Data review included checks of the following data quality elements: Holding times, continuing calibration verification, method blanks, field blanks, laboratory control sample recovery, matrix spike and matrix spike duplicate recovery and precision, surrogate recovery, and field duplicate precision. No out of control events warranting qualification of the data were observed. Analytical and data validation reports are attached.



analytical services center

International Specialists in Environmental Analysis

4493 Walden Avenue, Lancaster, New York 14086

Tel: 716/685-8080, 800/327-6534 • Fax: 716/685-0852 • Email: asc@ene.com



January 14, 2005

Jan Barbas
Parsons Engineering Science, Inc.
406 W. South Jordan Pkwy.
Suite 300
South Jordan, Utah 840953944

RE: Tooele RCRA Phase II
Work Order No.: **0501021**

Dear Jan Barbas,

Analytical Services Center received 14 samples on Tuesday, January 04, 2005 for the analyses presented in the following report.

The ASC certifies that the test results in this report meet all requirements of NELAC for which it holds certification except as noted in this narrative and/or as flagged in the report.

The ASC is accredited in the Fields of Testing Potable water (SDWA), Solid and Chemical Materials (Solid Hazardous Wastes, RCRA), Water (CWA and other non-potable water) and Air and Emissions. Its primary accrediting authorities are New York State Department of Health and Florida Department of Health. The particular analytes/methods certified may be ascertained by requesting the laboratory's current certificates from your laboratory Project Manager.

You will receive an invoice under separate cover.

E & E will retain the samples addressed in this report for 30 days, unless otherwise instructed by the client. If additional storage is requested, the storage fee is \$1.00 per sample container per month, to accrue until the client authorizes sample destruction.

This report is not to be reproduced, except in full, without the written approval of the laboratory.

Sincerely,


Tony Bogolin

Project Manager

CC:

Enclosures as noted

This report ends on page 340



Analytical Services Center
International Specialists in Environmental Analysis
Lancaster, New York 14086-
Phone: (716) 685-8080 Fax: (716) 685-0852

Laboratory Results

NYS ELAP ID#: 10486

CLIENT: Parsons Engineering Science, Inc.
Project: Tooele RCRA Phase II
Lab Order: 0501021
Date Received: 1/4/2005

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Alt. Client Id	Collection Date
0501021-01A	PARSTB1		1/3/2005 7:55:00 AM
0501021-02A	C-41GW001		1/3/2005 9:34:00 AM
0501021-03A	C-41FD001		1/3/2005 10:00:00 AM
0501021-04A	C-41GW002		1/3/2005 9:46:00 AM
0501021-05A	C-41GW003		1/3/2005 9:52:00 AM
0501021-06A	C-42GW001		1/3/2005 10:36:00 AM
0501021-07A	C-42GW002		1/3/2005 10:42:00 AM
0501021-08A	C-42GW003		1/3/2005 10:52:00 AM
0501021-09A	C-43GW001		1/3/2005 11:37:00 AM
0501021-10A	C-43GW002		1/3/2005 11:44:00 AM
0501021-11A	C-43GW003		1/3/2005 11:50:00 AM
0501021-12A	C-44GW001		1/3/2005 12:38:00 PM
0501021-13A	C-44GW002		1/3/2005 12:43:00 PM
0501021-14A	C-44GW003		1/3/2005 12:48:00 PM



Analytical Services Center

International Specialists in Environmental Analysis

4493 Walden Avenue

Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: PARSONS ENGINEERING SCIENCE, INC.
Project: Tooele RCRA Phase II
Lab Order: 0501021

CASE NARRATIVE

GCMS VOLATILES

A DB 624 column and a trap packed with OV-1, Tenax, silica gel and activated charcoal was used for the volatile analysis.

Sample Analysis

All aqueous volatile samples were determined to be at a pH of 1.

All samples were analyzed within hold time.

Samples C-42GW001, C-42GW002, C-42GW003, C-43GW001, C-43GW002 and C-43GW003 were analyzed at secondary dilutions due to the elevated level of trichloroethene present. The diluted sample results have been reported with the original undiluted analysis. Raw data has been included for each analysis.

Calibration and Tunes

All initial and continuing calibrations were acceptable.

There were no manual integrations required.

QC

All surrogate recoveries were within acceptable limits.

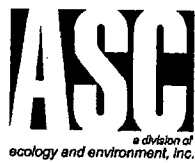
All blank analyses were acceptable.

All matrix spike/spike duplicate (MS/MSD) recoveries and RPD values were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

All internal standard area responses were acceptable.

Tony Bogolin
Project Manager
January 14, 2005



Analytical Services Center
International Specialists in Environmental Analysis
Lancaster, New York 14086-
Phone: (716) 685-8080 Fax: (716) 685-0852

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Lab Order: 0501021
Client: Parsons Engineering Science, Inc.
Project: Tooele RCRA Phase II

DATES SUMMARY REPORT

(LAB) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID	Type	DF	#Analytes	Fl
0501021-03A	C-41FD001	Water Low Level VOCs by Method 8260B	1/3/2005 10:00:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 10:00:00 AM	1/6/2005 1:55:00 AM 1089548	SAMP	1	21	[
(LAB) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID	Type	DF	#Analytes	Fl
0501021-02A	C-41GW001	Water Low Level VOCs by Method 8260B	1/3/2005 9:34:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 9:34:00 AM	1/6/2005 1:23:00 AM 1089547	SAMP	1	21	[
(LAB) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID	Type	DF	#Analytes	Fl
0501021-04A	C-41GW002	Water Low Level VOCs by Method 8260B	1/3/2005 9:46:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 9:46:00 AM	1/6/2005 2:27:00 AM 1089549	SAMP	1	21	[
(LAB) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID	Type	DF	#Analytes	Fl
0501021-05A	C-41GW003	Water Low Level VOCs by Method 8260B	1/3/2005 9:52:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 9:52:00 AM	1/6/2005 2:59:00 AM 1089550	SAMP	1	21	[
(LAB) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID	Type	DF	#Analytes	Fl
0501021-06A	C-42GW001	Water Low Level VOCs by Method 8260B	1/3/2005 10:36:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 10:36:00 AM	1/6/2005 3:30:00 AM 1089551	SAMP	1	20	[
		Low Level VOCs by Method 8260B			14:C 1/17/2005 10:36:00 AM	1/7/2005 1:20:00 PM 1090698	SAMP	25	1	[
(LAB) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID	Type	DF	#Analytes	Fl
0501021-07A	C-42GW002	Water Low Level VOCs by Method 8260B	1/3/2005 10:42:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 10:42:00 AM	1/6/2005 4:34:00 AM 1089553	SAMP	1	20	[
		Low Level VOCs by Method 8260B			14:C 1/17/2005 10:42:00 AM	1/7/2005 1:52:00 PM 1090699	SAMP	25	1	[
(LAB) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID	Type	DF	#Analytes	Fl
0501021-08A	C-42GW003	Water Low Level VOCs by Method 8260B	1/3/2005 10:52:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 10:52:00 AM	1/7/2005 3:58:00 PM 1090702	SAMP	25	1	[
		Low Level VOCs by Method 8260B			14:C 1/17/2005 10:52:00 AM	1/6/2005 4:02:00 AM 1089552	SAMP	1	20	[
(LAB) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID	Type	DF	#Analytes	Fl
0501021-09A	C-43GW001	Water Low Level VOCs by Method 8260B	1/3/2005 11:37:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 11:37:00 AM	1/10/2005 4:29:00 PM 1089962	SAMP	4	1	[
		Low Level VOCs by Method 8260B			14:C 1/17/2005 11:37:00 AM	1/7/2005 4:30:00 PM 1090703	SAMP	1	20	[
(LAB) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID	Type	DF	#Analytes	Fl
0501021-10A	C-43GW002	Water Low Level VOCs by Method 8260B	1/3/2005 11:44:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 11:44:00 AM	1/7/2005 5:02:00 PM 1090704	SAMP	1	20	[

HT From: C-Collection / R- Receipt(VTSR) / P-Prep / T-TCLP Prep

* "Analyzed" reflects the analysis date and time or injection time for analytical tests. For preparation tests "Analyzed" reflects the start of the preparation except when "AFCEE criteria used"; flag indicates date and time of completion of the preparation.

For TCLP/SPLP Extractions and subsequent preparation tests... "Analyzed" reflects the date of TCLP/SPLP Extraction/preparation. For Re-extracted (RE) samples: Preparation tests completed dates reflects the extraction from the original sample leachate unless an "RE" Sample exists for the extraction (tumble) test.



Analytical Services Center
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Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Lab Order: 0501021
Client: Parsons Engineering Science, Inc.
Project: Tooele RCRA Phase II

DATES SUMMARY REPORT

(LAB) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analized* - Analysis/BatchID	Type DF	#Analytes	FI
0501021-10A C-43GW002	Water	Low Level VOCs by Method 8260B	1/3/2005 11:44:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 11:44:00 AM	1/10/2005 5:01:00 PM 1089963	SAMP 4	1	[
(LAB) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analized* - Analysis/BatchID	Type DF	#Analytes	FI
0501021-11A C-43GW003	Water	Low Level VOCs by Method 8260B	1/3/2005 11:50:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 11:50:00 AM	1/7/2005 5:34:00 PM 1090705	SAMP 1	20	[
		Low Level VOCs by Method 8260B			14:C 1/17/2005 11:50:00 AM	1/10/2005 5:32:00 PM 1089960	SAMP 4	1	[
(LAB) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analized* - Analysis/BatchID	Type DF	#Analytes	FI
0501021-12A C-44GW001	Water	Low Level VOCs by Method 8260B	1/3/2005 12:38:00 PM	1/4/2005 8:35:00 AM	14:C 1/17/2005 12:38:00 PM	1/7/2005 6:06:00 PM 1090696	SAMP 1	21	[
(LAB) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analized* - Analysis/BatchID	Type DF	#Analytes	FI
0501021-13A C-44GW002	Water	Low Level VOCs by Method 8260B	1/3/2005 12:43:00 PM	1/4/2005 8:35:00 AM	14:C 1/17/2005 12:43:00 PM	1/11/2005 9:55:00 AM 1090824	SAMP 1	21	[
(LAB) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analized* - Analysis/BatchID	Type DF	#Analytes	FI
0501021-14A C-44GW003	Water	Low Level VOCs by Method 8260B	1/3/2005 12:48:00 PM	1/4/2005 8:35:00 AM	14:C 1/17/2005 12:48:00 PM	1/11/2005 10:26:00 AM 1090822	SAMP 1	21	[
(LAB) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analized* - Analysis/BatchID	Type DF	#Analytes	FI
0501021-01A PARSTB1	Water	Low Level VOCs by Method 8260B	1/3/2005 7:55:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 7:55:00 AM	1/5/2005 11:16:00 PM 1089546	SAMP 1	21	[

HT From: C-Collection / R- Receipt(VTSR) / P-Prep / T-TCLP Prep

* "Analized" reflects the analysis date and time or injection time for analytical tests. For preparation tests "Analized" reflects the start of the preparation except when "AFCEE criteria used"; flag indicates date and time of completion of the preparation.

For TCLP/SPLP Extractions and subsequent preparation tests... "Analized" reflects the date of TCLP/SPLP Extraction/preparation. For Re-extracted (RE) samples: Preparation tests completed dates reflects the extraction from the original sample leachate unless an "RE" Sample exists for the extraction (tumble) test.



Analytical Services Center
International Specialists in Environmental Analysis
Lancaster, New York 14086-
Phone: (716) 685-8080 Fax: (716) 685-0852

Laboratory Results

NYS ELAP ID#: 10486

Client: Parsons Engineering Science, Inc.
Project: Tooele RCRA Phase II
Work Order: 0501021

Method References

GCMS Volatiles

Parsons, Tooele - VOCs, Low Level by GCMS Method
8260B

Test Methods for Evaluating Solid Waste: Physical/Chemical
Methods. 3rd ed. 1986. Volumes 1A, 1B, 1C & Volume 2. (Includes
all Updates). U.S. Environmental Protection Agency, Office of Solid
Waste and Emergency Response.

SAMPLE RECEIPT RECORDS

CHAIN OF CUSTODY

PARSONS

COC ID: 840

Project Name: Tooele Industrial Area

Project Manager: Ed Staes

Sample Coordinator: Jeff Bigelow

Contractor: Parsons - SLC

Installation: TEAD

Sample Program: Shallow Soil Sampling

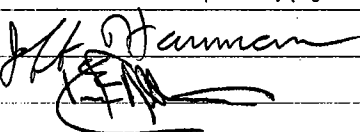
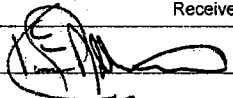
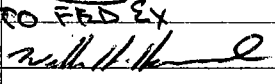
Parsons Point of Contact: Jan Barbas
406 W. South Jordan Parkway

Suite 300
South Jordan, Utah 84095

(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
	FIELDQC	PARSTB1	WQ	NA	TB	1	1/3/05	0755	JTB			3
	Analysis	Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN										

00

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
	1/3/05 13:17		1/3/05 13:17
	1/3/05 15:30	TO FRED EX 	1-4-05 / 0835

CHAIN OF CUSTODY PARSONS COC ID: 830		Project Name: Tooele Industrial Area		Contractor: Parsons - SLC		Parsons Point of Contact: Jan Barbas	
		Project Manager: Ed Staes		Installation: TEAD		406 W. South Jordan Parkway	
		Sample Coordinator: Jeff Bigelow		Sample Program: Shallow Soil Sampling		Suite 300 South Jordan, Utah 84095 (801) 572-5999 FAX (801) 572-9069	

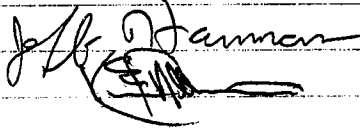
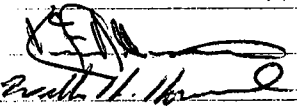
Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
C-41	C-41	C-41GW001	WG	DF	N	1	1/3/05	0934	JGA	358'	358'	3
Analysis		Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN										

6

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
Jeff Hammer	1/3/05 1317	[Signature]	1/3/05 1217
[Signature]	1/3/05 TO FRO EX 1530	[Signature]	1-4-05 1045

CHAIN OF CUSTODY PARSONS COC ID: 831	Project Name:	Tooele Industrial Area	Contractor:	Parsons - SLC	Parsons Point of Contact: Jan Barbas 406 W. South Jordan Parkway
	Project Manager:	Ed Staes	Installation:	TEAD	Suite 300 South Jordan, Utah 84095
	Sample Coordinator:	Jeff Bigelow	Sample Program:	Shallow Soil Sampling	(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
C-41	C-41	C-41FD001	WG	DF	FD	1	1/3/05	1000	JS	358'	358'	3
Analysis		Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN										

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
	1/3/05 1317 TO FAD EX 1/3/05 1530		1/3/05 13:17 1-4-05 / 0835

CHAIN OF CUSTODY PARSONS COC ID: 832		Project Name: Tooele Industrial Area		Contractor: Parsons - SLC		Parsons Point of Contact: Jan Barbas 406 W. South Jordan Parkway	
		Project Manager: Ed Staes		Installation: TEAD		Suite 300 South Jordan, Utah 84095	
		Sample Coordinator: Jeff Bigelow		Sample Program: Shallow Soil Sampling		(801) 572-5999 FAX (801) 572-9069	

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End Depth	Total Conts.
C-41	C-41	C-41GW002	WG	DF	N	1	1/3/05	0946	JNT	368'	368'	3
Analysis		Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN										

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
<i>Jeff Hammer</i>	1/3/05 1317	<i>[Signature]</i>	1/3/05 1317
<i>[Signature]</i>	1/3/05 1530 TO FWD EX	<i>Scott H. Howell</i>	1-4-05/0835

CHAIN OF CUSTODY

PARSONS

COC ID: 833

Project Name: Tooele Industrial Area

Contractor: Parsons - SLC

Parsons Point of Contact: Jan Barbas
406 W. South Jordan Parkway

Project Manager: Ed Staes

Installation: TEAD

Suite 300
South Jordan, Utah 84095

Sample Coordinator: Jeff Bigelow

Sample Program: Shallow Soil Sampling

(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
C-41	C-41	C-41GW003	WG	DF	N	1	1/3/05	0952	JNA	378'	378'	3
Analysis		Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN										

Relinquished by (Signature)

Date/Time

Received by (Signature)

Date/Time

J. F. O'Hannon
(Signature)

1/3/05 1317
TO FLD EX
1/3/05 1530

(Signature)
with H. Hume

1/3/05 1317
1-4-05/0855

CHAIN OF CUSTODY

PARSONS

COC ID: 834

Project Name: Tooele Industrial Area

Contractor: Parsons - SLC

Parsons Point of Contact: Jan Barbas
406 W. South Jordan Parkway
Suite 300

Project Manager: Ed Staes

Installation: TEAD

South Jordan, Utah 84095

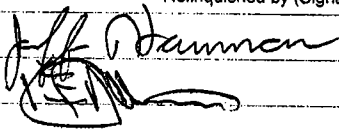
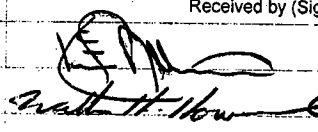
Sample Coordinator: Jeff Bigelow

Sample Program: Shallow Soil Sampling

(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
C-42	C-42	C-42GW001	WG	DF	N	1	1/3/05	1030	JBA	340'	340'	3
Analysis		Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN										

13

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
	1/3/05 1317 1130S TO FAD EX 1530		1/3/05 1317 1-4-05/0835

CHAIN OF CUSTODY PARSONS COC ID: 835		Project Name: Tooele Industrial Area		Contractor: Parsons - SLC		Parsons Point of Contact: Jan Barbas 406 W. South Jordan Parkway					
		Project Manager: Ed Staes		Installation: TEAD		Suite 300 South Jordan, Utah 84095					
		Sample Coordinator: Jeff Bigelow		Sample Program: Shallow Soil Sampling		(801) 572-5999 FAX (801) 572-9069					

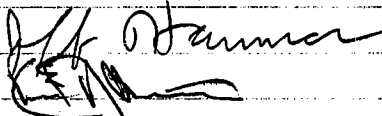
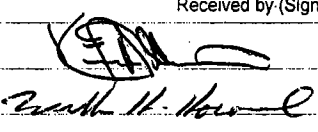
Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
C-42	C-42	C-42GW002	WG	DF	N	1	1/3/05	1642	JNT	350'	350'	3
Analysis		Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN										

14

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
<i>Jeff Hammer</i>	1/3/05 1317	<i>[Signature]</i>	1/3/05 1317
<i>[Signature]</i>	1/3/05 TO FAD EX 1530	<i>Matthew [Signature]</i>	1-4-05 / 0835

CHAIN OF CUSTODY PARSONS COC ID: 836		Project Name: Tooele Industrial Area		Contractor: Parsons - SLC		Parsons Point of Contact: Jan Barbas 406 W. South Jordan Parkway					
		Project Manager: Ed Staes		Installation: TEAD		Suite 300 South Jordan, Utah 84095					
		Sample Coordinator: Jeff Bigelow		Sample Program: Shallow Soil Sampling		(801) 572-5999 FAX (801) 572-9069					

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
C-42	C-42	C-42MS002	WG	DF	MS	1	1/3/05	1042	JNT	350'	350'	3
Analysis		Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN										

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
	1/3/05 1317 TO F&D EX 1/3/05 1330		1/3/05 1317 1-405/0835

CHAIN OF CUSTODY PARSONS COC ID: 837		Project Name: Tooele Industrial Area		Contractor: Parsons - SLC		Parsons Point of Contact: Jan Barbas 406 W. South Jordan Parkway					
		Project Manager: Ed Staes		Installation: TEAD		Suite 300 South Jordan, Utah 84095					
		Sample Coordinator: Jeff Bigelow		Sample Program: Shallow Soil Sampling		(801) 572-5999 FAX (801) 572-9069					

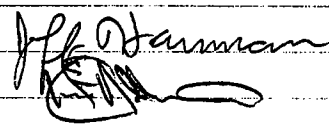

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
C-42	C-42	C-42SD002	WG	DF	SD	1	11/3/05	1042	JNT	350'	350'	3
Analysis		Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN										

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
Jeff Hammann	11/3/05 1317 11/3/05 TO FLOW EX 1330	[Signature]	11/3/05 1317 1-4-05/0825

CHAIN OF CUSTODY PARSONS COC ID: 838		Project Name: Tooele Industrial Area		Contractor: Parsons - SLC		Parsons Point of Contact: Jan Barbas 406 W. South Jordan Parkway					
		Project Manager: Ed Staes		Installation: TEAD		Suite 300 South Jordan, Utah 84095					
		Sample Coordinator: Jeff Bigelow		Sample Program: Shallow Soil Sampling		(801) 572-5999 FAX (801) 572-9069					

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
C-42	C-42	C-42GW003	WG	DF	N	1	11/3/05	1052	JA	360'	360'	3
Analysis		Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN										

17

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
	11/3/05 1317 11/3/05 TO FRO EX 1530		11/3/05 1317 1-4-05/0855

CHAIN OF CUSTODY

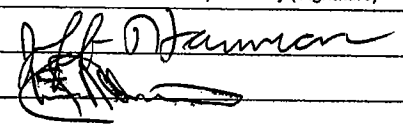
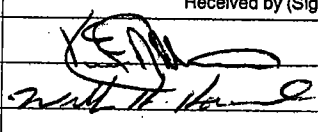
PARSONS

COC ID: 914

Project Name:	Tooele Industrial Area	Contractor:	Parsons - SLC	Parsons Point of Contact: Jan Barbas 406 W. South Jordan Parkway
Project Manager:	Ed Staes	Installation:	TEAD	Suite 300 South Jordan, Utah 84095
Sample Coordinator:	Jeff Bigelow	Sample Program:	Shallow Soil Sampling	(801) 572-5999 FAX (801) 572-9069

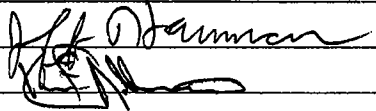
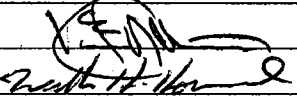
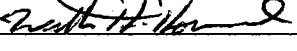
Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Log Depth	End Depth	Total Coms
C-43	C-43	C-43GW001	WG	DF	N	1	1/3/05	1137	JTB	319'	319'	3
Analysis		Lab	Goal	No. Coms	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN										

18

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
	1/3/05 1317		1/3/05 1317
	13/05 TO FPD FX 1530		1-405/0835

CHAIN OF CUSTODY PARSONS COC ID: 915	Project Name:	Tooele Industrial Area	Contractor:	Parsons - SLC	Parsons Point of Contact: Jan Barbas
	Project Manager:	Ed Staes	Installation:	TEAD	Suite 300
	Sample Coordinator:	Jeff Bigelow	Sample Program:	Shallow Soil Sampling	South Jordan, Utah 84095 (801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Bag Depth	End Depth	Total Conts.
C-43	C-43	C-43GW002	WG	DF	N	1	1/3/05	1144	JMA	329'	329'	3
Analysis		Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN										

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
	1/3/05 1317		1/3/05 1317
	1/3/05 TO F&D EX 1530		1-4-05 1025

CHAIN OF CUSTODY

PARSONS

COC ID: 916

Project Name: Tooele Industrial Area

Contractor: Parsons - SLC

Parsons Point of Contact: Jan Barbas
406 W. South Jordan Parkway

Project Manager: Ed Staes

Installation: TEAD

Suite 300
South Jordan, Utah 84095

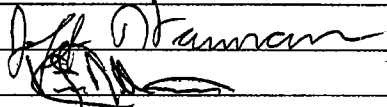
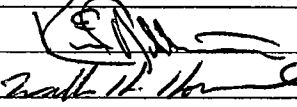
Sample Coordinator: Jeff Bigelow

Sample Program: Shallow Soil Sampling

(801) 572-5999 FAX (801) 572-9069

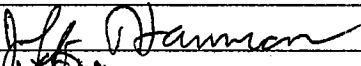
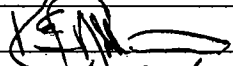

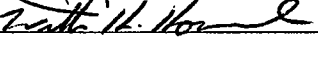
Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Bag Depth	End Depth	Total Confs.
C-43	C-43	C-43GW003	WG	DF	N	1	1/3/05	1150	JGA	3.39'	339'	3
Analysis		Lab	Cooler	No. Confs.	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN										

20

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
	1/3/05 1317 TO F&O EX 1/3/05 1530		1/3/05 1317 1-405 / 0835

CHAIN OF CUSTODY PARSONS COC ID: 917	Project Name:	Tooele Industrial Area	Contractor:	Parsons - SLC	Parsons Point of Contact: Jan Barbas
	Project Manager:	Ed Staes	Installation:	TEAD	406 W. South Jordan Parkway
	Sample Coordinator:	Jeff Bigelow	Sample Program:	Shallow Soil Sampling	Suite 300 South Jordan, Utah 84095 (801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Bag Depth	End Depth	Total Conts.
C-44	C-44	C-44GW001	WG	DF	N	1	1/3/05	1238	J.A.	283'	283'	3
Analysis		Lab	Coiler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN										

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
	1/3/05 1317		1/3/05 1317
	1/3/05 1330 TO F&D EX		1-4-05 1635

CHAIN OF CUSTODY

PARSONS

COC ID: 918

Project Name: Tooele Industrial Area

Contractor: Parsons - SLC

Parsons Point of Contact: Jan Barbas
406 W. South Jordan Parkway

Project Manager: Ed Staes

Installation: TEAD

Suite 300
South Jordan, Utah 84095

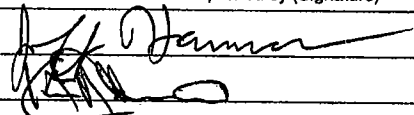
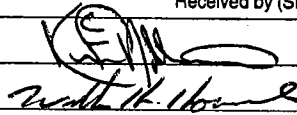
Sample Coordinator: Jeff Bigelow

Sample Program: Shallow Soil Sampling

(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End Depth	Total Conts
C-44	C-44	C-44GW002	WG	DF	N	1	1/3/05	1243	JNT	293	293	3
Analysis		Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN										

22

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
	1/3/05 1317		1/3/05 1317
	TO FED EX 1/3/05 1330	with K. Boone	1-4-05/0835

CHAIN OF CUSTODY

PARSONS

COC ID: 919

Project Name: Tooele Industrial Area

Contractor: Parsons - SLC

Parsons Point of Contact: Jan Barbas
406 W. South Jordan Parkway

Project Manager: Ed Staes

Installation: TEAD

Suite 300
South Jordan, Utah 84095

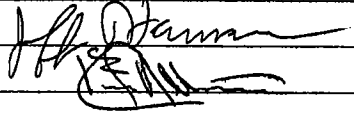
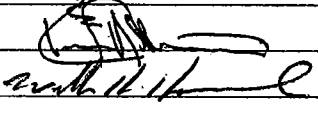
Sample Coordinator: Jeff Bigelow

Sample Program: Shallow Soil Sampling

(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Req. Depth	End Depth	Total Conts.
C-44	C-44	C-44GW003	WG	DF	N	1	1/3/05	1248	JAT	303'	303'	3
Analysis		Lab	Cooler	No. Conts.	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN										

23

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
	1/3/05 1317 TO FED EX		1/3/05 1317
	1/3/05 1530		1-4-05/0835



Cooler Receipt Form

No. of Packages:	1	Date Received:	1-4-05
Package Receipt No.:	15296	Project or Site Name:	
Client:	Parsons		

A. Preliminary Examination and Receipt Phase		Circle One		
1. Did coolers come with airbill or packing slip?		<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NA
Circle carrier here and print airbill number below: <input checked="" type="radio"/> FedEx Airborne Client Other _____				
Shipped as high hazard or dangerous goods?		<input type="radio"/> Yes	<input checked="" type="radio"/> No	<input type="radio"/> NA
2. Did cooler(s) have custody seals?		<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NA
3. Were custody seals unbroken and intact on receipt?		<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NA
4. Were custody seals dated and signed?		<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NA
5. How was package secured?	Not secured <input checked="" type="radio"/> Fiberglass Tape			

B. Unpacking Phase					
6. Date cooler(s) opened:	1-4-05	Cooler(s) opened by:	<u>[Signature]</u>		
7. Was a temperature blank vial included inside cooler(s)?		<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NA	
Please Record Temperature Vial or Cooler Temperature for Each Cooler, Range (2° - 6°C)*					
Airbill No.	Temp. °C	Airbill No.	Temp. °C	Airbill No.	Temp. °C
7903 8450 3906	3.5				
Thermometer No.:	231	Correction Factor:	0.0	*If temperature is outside of acceptable range, prepare a PM Notification form indicating affected containers.	
8. Were the C-O-C forms received?		<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NA	
C-O-C forms numbers if present:					
9. Was enough packing material used in cooler(s)?		<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NA	
Type of material: <input type="checkbox"/> Vermiculite <input checked="" type="checkbox"/> Bubble Wrap <input type="checkbox"/> Other _____					
10. If cooling was required, what was the means (type ice) of cooling used:	<input checked="" type="checkbox"/> Wet <input type="checkbox"/> Dry <input type="checkbox"/> Blue <input type="checkbox"/> Other				NA
11. Were all containers sealed in separate plastic bags?		<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NA	
12. Did all containers arrive unbroken and in good condition?		<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NA	
13. Interim storage area if not logged: _____					
In: Date _____	Time _____	Signature _____			
Out: Date _____	Time _____	Signature _____			

C. Login Phase			
Samples Logged in By Signature:	<u>[Signature]</u>	Date:	1/4/05
14. Were all container labels complete (e.g. date, time preserved)?		<input checked="" type="radio"/> Yes	<input type="radio"/> No <input type="radio"/> NA
15. Were all C-O-C forms filled out properly in black ink and signed?		<input checked="" type="radio"/> Yes	<input type="radio"/> No <input type="radio"/> NA
16. Did the C-O-C form agree with containers received?		<input checked="" type="radio"/> Yes	<input type="radio"/> No <input type="radio"/> NA
17. Were the correct containers used for the tests requested?		<input checked="" type="radio"/> Yes	<input type="radio"/> No <input type="radio"/> NA
18. Were the correct preservatives listed on the sample labels?		<input checked="" type="radio"/> Yes	<input type="radio"/> No <input type="radio"/> NA
19. Was a sufficient sample volume sent for the tests requested?		<input checked="" type="radio"/> Yes	<input type="radio"/> No <input type="radio"/> NA
20. Were all volatile samples received without headspace?		<input checked="" type="radio"/> Yes	<input type="radio"/> No <input type="radio"/> NA

RESULTS SUMMARY

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.

Client Sample ID: PARSTB1

Lab Order: 0501021

Alt. Client ID:

Project: Tooele RCRA Phase II

Collection Date: 1/3/2005 7:55:00 AM % Moist:

Lab ID: 0501021-01A

Sample Type: SAMP

Matrix: Water

Test Code: C_8260B_5030B_LL_W_018

LOW LEVEL VOCs BY METHOD 8260B

Method: SW8260B

Prep Method: SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/5/2005 11:16:00 PM	LINUS_050105E	GP
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	ND		1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	ND		1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	ND		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	ND		1.00	µg/L	1			
Vinyl chloride	ND		1.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	93		70 - 130	%REC	1	1/5/2005 11:16:00 PM	LINUS_050105E	GP
Surr:4-Bromofluorobenzene	96		70 - 130	%REC	1			
Surr:Toluene-d8	91		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits

B - Analyte found in Method blank

D - Diluted due to matrix or extended target compounds

DF - Dilution Factor

DNI - Did not Ignite

E - Result above quantitation limit (high standard or ICP linear range).

H - Value Exceeds Maximum Contaminant Level

J - Estimated value

M - Matrix Spike Recovery outside limits

N - Single Column Analysis

NC - Not Calculated

ND - Not Detected at the Reporting Limit

NP - Petroleum Pattern is not present

P - Post Spike Recovery outside limits

R - RPD outside recovery limits

**Analytical Services Center**

International Specialists in Environmental Analysis

4493 Walden Avenue

Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.

Client Sample ID: C-41GW001

Lab Order: 0501021

Alt. Client ID:

Project: Tooele RCRA Phase II

Collection Date: 1/3/2005 9:34:00 AM % Moist:

Lab ID: 0501021-02A

Sample Type: SAMP

Matrix: Water

Test Code: C_8260B_5030B_LL_W_018

LOW LEVEL VOCS BY METHOD 8260B

Method: SW8260B

Prep Method: SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/6/2005 1:23:00 AM	LINUS_050105E	GP
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	0.229	J	1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	ND		1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	ND		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	18.7		1.00	µg/L	1			
Vinyl chloride	ND		1.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	96		70 - 130	%REC	1	1/6/2005 1:23:00 AM	LINUS_050105E	GP
Surr:4-Bromofluorobenzene	97		70 - 130	%REC	1			
Surr:Toluene-d8	93		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits

B - Analyte found in Method blank

D - Diluted due to matrix or extended target compounds

DF - Dilution Factor

DNI - Did not Ignite

E - Result above quantitation limit (high standard or ICP linear range).

H - Value Exceeds Maximum Contaminant Level

J - Estimated value

M - Matrix Spike Recovery outside limits

N - Single Column Analysis

NC - Not Calculated

ND - Not Detected at the Reporting Limit

NP - Petroleum Pattern is not present

P - Post Spike Recovery outside limits

R - RPD outside recovery limits

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.

Client Sample ID: C-41FD001

Lab Order: 0501021

Alt. Client ID:

Project: Tooele RCRA Phase II

Collection Date: 1/3/2005 10:00:00 AM % Moist:

Lab ID: 0501021-03A

Sample Type: SAMP

Matrix: Water

Test Code: C_8260B_5030B_LL_W_018

LOW LEVEL VOCs BY METHOD 8260B

Method: SW8260B

Prep Method: SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/6/2005 1:55:00 AM	LINUS_050105E	GP
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	0.251	J	1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	ND		1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	ND		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	18.5		1.00	µg/L	1			
Vinyl chloride	ND		1.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	95		70 - 130	%REC	1	1/6/2005 1:55:00 AM	LINUS_050105E	GP
Surr:4-Bromofluorobenzene	96		70 - 130	%REC	1			
Surr:Toluene-d8	94		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits

DF - Dilution Factor

H - Value Exceeds Maximum Contaminant Level

N - Single Column Analysis

NP - Petroleum Pattern is not present

B - Analyte found in Method blank

DNI - Did not Ignite

J - Estimated value

NC - Not Calculated

P - Post Spike Recovery outside limits

D - Diluted due to matrix or extended target compounds

E - Result above quantitation limit (high standard or ICP linear range).

M - Matrix Spike Recovery outside limits

ND - Not Detected at the Reporting Limit

R - RPD outside recovery limits

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.

Client Sample ID: C-41GW002

Lab Order: 0501021

Alt. Client ID:

Project: Tooele RCRA Phase II

Collection Date: 1/3/2005 9:46:00 AM % Moist:

Lab ID: 0501021-04A

Sample Type: SAMP

Matrix: Water

Test Code: C_8260B_5030B_LL_W_018

LOW LEVEL VOCs BY METHOD 8260B

Method: SW8260B

Prep Method: SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/6/2005 2:27:00 AM	LINUS_050105E	GP
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	0.237	J	1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	ND		1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	ND		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	18.4		1.00	µg/L	1			
Vinyl chloride	ND		1.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	94		70 - 130	%REC	1	1/6/2005 2:27:00 AM	LINUS_050105E	GP
Surr:4-Bromofluorobenzene	97		70 - 130	%REC	1			
Surr:Toluene-d8	93		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits

B - Analyte found in Method blank

D - Diluted due to matrix or extended target compounds

DF - Dilution Factor

DNI - Did not Ignite

E - Result above quantitation limit (high standard or ICP linear range).

H - Value Exceeds Maximum Contaminant Level

J - Estimated value

M - Matrix Spike Recovery outside limits

N - Single Column Analysis

NC - Not Calculated

ND - Not Detected at the Reporting Limit

NP - Petroleum Pattern is not present

P - Post Spike Recovery outside limits

R - RPD outside recovery limits

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.

Client Sample ID: C-41GW003

Lab Order: 0501021

Alt. Client ID:

Project: Tooele RCRA Phase II

Collection Date: 1/3/2005 9:52:00 AM % Moist:

Lab ID: 0501021-05A

Sample Type: SAMP

Matrix: Water

Test Code: C_8260B_5030B_LL_W_018

LOW LEVEL VOCs BY METHOD 8260B

Method: SW8260B

Prep Method: SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/6/2005 2:59:00 AM	LINUS_050105E	GP
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	0.231	J	1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	ND		1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	ND		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	15.5		1.00	µg/L	1			
Vinyl chloride	ND		1.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	95		70 - 130	%REC	1	1/6/2005 2:59:00 AM	LINUS_050105E	GP
Surr:4-Bromofluorobenzene	97		70 - 130	%REC	1			
Surr:Toluene-d8	94		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits

B - Analyte found in Method blank

D - Diluted due to matrix or extended target compounds

DF - Dilution Factor

DNI - Did not Ignite

E - Result above quantitation limit (high standard or ICP linear range).

H - Value Exceeds Maximum Contaminant Level

J - Estimated value

M - Matrix Spike Recovery outside limits

N - Single Column Analysis

NC - Not Calculated

ND - Not Detected at the Reporting Limit

NP - Petroleum Pattern is not present

P - Post Spike Recovery outside limits

R - RPD outside recovery limits

**Analytical Services Center**

International Specialists in Environmental Analysis

4493 Walden Avenue

Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.

Client Sample ID: C-42GW001

Lab Order: 0501021

Alt. Client ID:

Project: Tooele RCRA Phase II

Collection Date: 1/3/2005 10:36:00 AM % Moist:

Lab ID: 0501021-06A

Sample Type: SAMP

Matrix: Water

Test Code: C_8260B_5030B_LL_W_018

LOW LEVEL VOCS BY METHOD 8260B

Method: SW8260B

Prep Method: SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/6/2005 3:30:00 AM	LINUS_050105E	GP
1,1,2-Trichloroethane	0.544	J	1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	0.201	J	1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	4.24		1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	0.829	J	1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	ND		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	902		25.0	µg/L	25	1/7/2005 1:20:00 PM	LINUS_050107C	DWW
Vinyl chloride	ND		1.00	µg/L	1	1/6/2005 3:30:00 AM	LINUS_050105E	GP
Surr:1,2-Dichloroethane-d4	96		70 - 130	%REC	1	1/6/2005 3:30:00 AM	LINUS_050105E	GP
Surr:4-Bromofluorobenzene	97		70 - 130	%REC	1			
Surr:Toluene-d8	95		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits

B - Analyte found in Method blank

D - Diluted due to matrix or extended target compounds

DF - Dilution Factor

DNI - Did not Ignite

E - Result above quantitation limit (high standard or ICP linear range).

H - Value Exceeds Maximum Contaminant Level

J - Estimated value

M - Matrix Spike Recovery outside limits

N - Single Column Analysis

NC - Not Calculated

ND - Not Detected at the Reporting Limit

NP - Petroleum Pattern is not present

P - Post Spike Recovery outside limits

R - RPD outside recovery limits



Analytical Services Center
International Specialists in Environmental Analysis
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.

Lab Order: 0501021

Project: Tooele RCRA Phase II

Lab ID: 0501021-07A

Sample Type: SAMP

Matrix: Water

Client Sample ID: C-42GW002

Alt. Client ID:

Collection Date: 1/3/2005 10:42:00 AM % Moist:

Test Code: C_8260B_5030B_LL_W_018

LOW LEVEL VOCs BY METHOD 8260B

Method: SW8260B

Prep Method: SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/6/2005 4:34:00 AM	LINUS_050105E	GP
1,1,2-Trichloroethane	0.577	J	1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	0.203	J	1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	4.93		1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	0.815	J	1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	0.165	J	1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	1010		25.0	µg/L	25	1/7/2005 1:52:00 PM	LINUS_050107C	DWW
Vinyl chloride	ND		1.00	µg/L	1	1/6/2005 4:34:00 AM	LINUS_050105E	GP
Surr:1,2-Dichloroethane-d4	96		70 - 130	%REC	1	1/6/2005 4:34:00 AM	LINUS_050105E	GP
Surr:4-Bromofluorobenzene	96		70 - 130	%REC	1			
Surr:Toluene-d8	94		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits

DF - Dilution Factor

H - Value Exceeds Maximum Contaminant Level

N - Single Column Analysis

NP - Petroleum Pattern is not present

B - Analyte found in Method blank

DNI - Did not Ignite

J - Estimated value

NC - Not Calculated

P - Post Spike Recovery outside limits

D - Diluted due to matrix or extended target compounds

E - Result above quantitation limit (high standard or ICP linear range).

M - Matrix Spike Recovery outside limits

ND - Not Detected at the Reporting Limit

R - RPD outside recovery limits



Analytical Services Center

International Specialists in Environmental Analysis

4493 Walden Avenue

Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.

Lab Order: 0501021

Project: Tooele RCRA Phase II

Client Sample ID: C-42GW003

Alt. Client ID:

Collection Date: 1/3/2005 10:52:00 AM % Moist:

Lab ID: 0501021-08A

Sample Type: SAMP

Matrix: Water

Test Code: C_8260B_5030B_LL_W_018

LOW LEVEL VOCs BY METHOD 8260B

Method: SW8260B

Prep Method: SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/6/2005 4:02:00 AM	LINUS_050105E	GP
1,1,2-Trichloroethane	0.635	J	1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	0.214	J	1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	0.0970	J	1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	4.72		1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	0.826	J	1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	0.142	J	1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	958		25.0	µg/L	25	1/7/2005 3:58:00 PM	LINUS_050107C	DWW
Vinyl chloride	ND		1.00	µg/L	1	1/6/2005 4:02:00 AM	LINUS_050105E	GP
Surr:1,2-Dichloroethane-d4	97		70 - 130	%REC	1	1/6/2005 4:02:00 AM	LINUS_050105E	GP
Surr:4-Bromofluorobenzene	97		70 - 130	%REC	1			
Surr:Toluene-d8	95		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits

DF - Dilution Factor

H - Value Exceeds Maximum Contaminant Level

N - Single Column Analysis

NP - Petroleum Pattern is not present

B - Analyte found in Method blank

DNI - Did not Ignite

J - Estimated value

NC - Not Calculated

P - Post Spike Recovery outside limits

D - Diluted due to matrix or extended target compounds

E - Result above quantitation limit (high standard or ICP linear range).

M - Matrix Spike Recovery outside limits

ND - Not Detected at the Reporting Limit

R - RPD outside recovery limits

**Analytical Services Center**

International Specialists in Environmental Analysis

4493 Walden Avenue

Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.**Client Sample ID:** C-43GW001**Lab Order:** 0501021**Alt. Client ID:****Project:** Tooele RCRA Phase II**Collection Date:** 1/3/2005 11:37:00 AM % Moist:**Lab ID:** 0501021-09A**Sample Type:** SAMP**Matrix:** Water**Test Code:** C_8260B_5030B_LL_W_018**LOW LEVEL VOCs BY METHOD 8260B****Method:** SW8260B**Prep Method:** SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/7/2005 4:30:00 PM	LINUS_050107C	DWW
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	0.624	J	1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	0.130	J	1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	ND		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	123		4.00	µg/L	4	1/10/2005 4:29:00 PM	LINUS_050110C	
Vinyl chloride	ND		1.00	µg/L	1	1/7/2005 4:30:00 PM	LINUS_050107C	
Surr:1,2-Dichloroethane-d4	95		70 - 130	%REC	1	1/7/2005 4:30:00 PM	LINUS_050107C	DWW
Surr:4-Bromofluorobenzene	98		70 - 130	%REC	1			
Surr:Toluene-d8	93		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits

DF - Dilution Factor

H - Value Exceeds Maximum Contaminant Level

N - Single Column Analysis

NP - Petroleum Pattern is not present

B - Analyte found in Method blank

DNI - Did not Ignite

J - Estimated value

NC - Not Calculated

P - Post Spike Recovery outside limits

D - Diluted due to matrix or extended target compounds

E - Result above quantitation limit (high standard or ICP linear range).

M - Matrix Spike Recovery outside limits

ND - Not Detected at the Reporting Limit

R - RPD outside recovery limits



ANALYTICAL SERVICES CENTER

International Specialists in Environmental Analysis

4493 Walden Avenue

a division of
ecology and environment, inc. Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.

Client Sample ID: C-43GW002

Lab Order: 0501021

Alt. Client ID:

Project: Tooele RCRA Phase II

Collection Date: 1/3/2005 11:44:00 AM % Moist:

Lab ID: 0501021-10A

Sample Type: SAMP

Matrix: Water

Test Code: C_8260B_5030B_LL_W_018

LOW LEVEL VOCs BY METHOD 8260B

Method: SW8260B

Prep Method: SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/7/2005 5:02:00 PM	LINUS_050107C	DWW
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	0.606	J	1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	0.145	J	1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	ND		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	133		4.00	µg/L	4	1/10/2005 5:01:00 PM	LINUS_050110C	
Vinyl chloride	ND		1.00	µg/L	1	1/7/2005 5:02:00 PM	LINUS_050107C	
Surr:1,2-Dichloroethane-d4	94		70 - 130	%REC	1	1/7/2005 5:02:00 PM	LINUS_050107C	DWW
Surr:4-Bromofluorobenzene	97		70 - 130	%REC	1			
Surr:Toluene-d8	92		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits

DF - Dilution Factor

H - Value Exceeds Maximum Contaminant Level

N - Single Column Analysis

NP - Petroleum Pattern is not present

B - Analyte found in Method blank

DNI - Did not Ignite

J - Estimated value

NC - Not Calculated

P - Post Spike Recovery outside limits

D - Diluted due to matrix or extended target compounds

E - Result above quantitation limit (high standard or ICP linear range).

M - Matrix Spike Recovery outside limits

ND - Not Detected at the Reporting Limit

R - RPD outside recovery limits



Analytical Services Center
International Specialists in Environmental Analysis
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.

Client Sample ID: C-43GW003

Lab Order: 0501021

Alt. Client ID:

Project: Tooele RCRA Phase II

Collection Date: 1/3/2005 11:50:00 AM % Moist:

Lab ID: 0501021-11A

Sample Type: SAMP

Matrix: Water

Test Code: C_8260B_5030B_LL_W_018

LOW LEVEL VOCS BY METHOD 8260B

Method: SW8260B

Prep Method: SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/7/2005 5:34:00 PM	LINUS_050107C	DWW
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	0.642	J	1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	0.135	J	1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	ND		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	121		4.00	µg/L	4	1/10/2005 5:32:00 PM	LINUS_050110C	
Vinyl chloride	ND		1.00	µg/L	1	1/7/2005 5:34:00 PM	LINUS_050107C	
Surr:1,2-Dichloroethane-d4	96		70 - 130	%REC	1	1/7/2005 5:34:00 PM	LINUS_050107C	DWW
Surr:4-Bromofluorobenzene	96		70 - 130	%REC	1			
Surr:Toluene-d8	92		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits

DF - Dilution Factor

H - Value Exceeds Maximum Contaminant Level

N - Single Column Analysis

NP - Petroleum Pattern is not present

B - Analyte found in Method blank

DNI - Did not Ignite

J - Estimated value

NC - Not Calculated

P - Post Spike Recovery outside limits

D - Diluted due to matrix or extended target compounds

E - Result above quantitation limit (high standard or ICP linear range).

M - Matrix Spike Recovery outside limits

ND - Not Detected at the Reporting Limit

R - RPD outside recovery limits

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.

Client Sample ID: C-44GW001

Lab Order: 0501021

Alt. Client ID:

Project: Tooele RCRA Phase II

Collection Date: 1/3/2005 12:38:00 PM % Moist:

Lab ID: 0501021-12A

Sample Type: SAMP

Matrix: Water

Test Code: C_8260B_5030B_LL_W_018

LOW LEVEL VOCS BY METHOD 8260B

Method: SW8260B

Prep Method: SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/7/2005 6:06:00 PM	LINUS_050107C	DWW
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	31.0		1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	0.402	J	1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	ND		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	8.95		1.00	µg/L	1			
Vinyl chloride	ND		1.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	97		70 - 130	%REC	1	1/7/2005 6:06:00 PM	LINUS_050107C	DWW
Surr:4-Bromofluorobenzene	97		70 - 130	%REC	1			
Surr:Toluene-d8	91		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits

B - Analyte found in Method blank

D - Diluted due to matrix or extended target compounds

DF - Dilution Factor

DNI - Did not Ignite

E - Result above quantitation limit (high standard or ICP linear range).

H - Value Exceeds Maximum Contaminant Level

J - Estimated value

M - Matrix Spike Recovery outside limits

N - Single Column Analysis

NC - Not Calculated

ND - Not Detected at the Reporting Limit

NP - Petroleum Pattern is not present

P - Post Spike Recovery outside limits

R - RPD outside recovery limits

**Analytical Services Center**

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.**Client Sample ID:** C-44GW002**Lab Order:** 0501021**Alt. Client ID:****Project:** Tooele RCRA Phase II**Collection Date:** 1/3/2005 12:43:00 PM % Moist:**Lab ID:** 0501021-13A**Sample Type:** SAMP**Matrix:** Water**Test Code:** C_8260B_5030B_LL_W_018**LOW LEVEL VOCs BY METHOD 8260B****Method:** SW8260B**Prep Method:** SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/11/2005 9:55:00 AM	LINUS_050111B	DWW
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	29.5		1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	0.377	J	1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	ND		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	8.22		1.00	µg/L	1			
Vinyl chloride	ND		1.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	96		70 - 130	%REC	1	1/11/2005 9:55:00 AM	LINUS_050111B	DWW
Surr:4-Bromofluorobenzene	98		70 - 130	%REC	1			
Surr:Toluene-d8	94		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits

DF - Dilution Factor

H - Value Exceeds Maximum Contaminant Level

N - Single Column Analysis

NP - Petroleum Pattern is not present

B - Analyte found in Method blank

DNI - Did not Ignite

J - Estimated value

NC - Not Calculated

P - Post Spike Recovery outside limits

D - Diluted due to matrix or extended target compounds

E - Result above quantitation limit (high standard or ICP linear range).

M - Matrix Spike Recovery outside limits

ND - Not Detected at the Reporting Limit

R - RPD outside recovery limits

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.

Client Sample ID: C-44GW003

Lab Order: 0501021

Alt. Client ID:

Project: Tooele RCRA Phase II

Collection Date: 1/3/2005 12:48:00 PM % Moist:

Lab ID: 0501021-14A

Sample Type: SAMP

Matrix: Water

Test Code: C_8260B_5030B_LL_W_018

LOW LEVEL VOCs BY METHOD 8260B

Method: SW8260B

Prep Method: SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/11/2005 10:26:00 AM	LINUS_050111B	DWW
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	28.6		1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	0.387	J	1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	ND		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	8.26		1.00	µg/L	1			
Vinyl chloride	ND		1.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	95		70 - 130	%REC	1	1/11/2005 10:26:00 AM	LINUS_050111B	DWW
Surr:4-Bromofluorobenzene	97		70 - 130	%REC	1			
Surr:Toluene-d8	95		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits
DF - Dilution Factor
H - Value Exceeds Maximum Contaminant Level
N - Single Column Analysis
NP - Petroleum Pattern is not present

B - Analyte found in Method blank
DNI - Did not Ignite
J - Estimated value
NC - Not Calculated
P - Post Spike Recovery outside limits

D - Diluted due to matrix or extended target compounds
E - Result above quantitation limit (high standard or ICP linear range).
M - Matrix Spike Recovery outside limits
ND - Not Detected at the Reporting Limit
R - RPD outside recovery limits

AUTOMATED DATA REVIEW SUMMARY

Facility: SWMU 58
Event: 2004 10 SWMU 58 Vertical Profile Borings
Contract: 9T9H213C
Sample Delivery Group: 0501021

Field Contractor: Parsons Engineering Science, Salt Lake City
Laboratory Contractor: Ecology and Environment, Inc., Lancaster, NY
Data Review Contractor: Synectics, Sacramento, CA
Guidance Document: *Final Phase II RCRA Facility Investigation SWMU-58 Workplan, December 2003*

Analytical Method	Normal Samples	Field QC Samples
SW8260B	12	2

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in Final Phase II RCRA Facility Investigation SWMU-58 Workplan, December 2003 to the extent possible. Where definitive guidance is not provided, data has been evaluated in a conservative manner using professional judgment. In cases where two qualifiers are listed as an action, such as "J/UJ", the first qualifier applies to positive results, and the second to non-detect results.

Samples were collected by Parsons Engineering Science, Salt Lake City; analyses were performed by Ecology and Environment, Inc., Lancaster, NY and were reported under sample delivery group (SDG) 0501021. Results have been evaluated electronically using electronic data deliverables (EDDs) provided by the laboratory. The laboratory data summary forms (hard copy) have been reviewed during this effort and compared to the automated review output. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative. The following quality control elements were evaluated during this review effort:

- Technical Holding Times
- Continuing Calibration Verification
- Method Blank Contamination
- Field Blank Contamination
- Blank Spike Accuracy
- Blank Spike Precision
- Matrix Spike Accuracy
- Matrix Spike Precision
- Surrogate Recovery
- Laboratory Duplicate Precision
- Field Duplicate Precision

A minimum of ten percent of sample and QC results were manually evaluated for compliance with project specific requirements and consistency with hard copy results. The following reports were generated during the evaluation of this data set and are presented as attachments to this report as applicable.

Data Submission Warnings – Warnings encountered during the data submission process are evaluated and their affect on data quality is discussed in the narrative.

Batch – The analytical batch report is reviewed for completeness and compliance with project specific requirements. Incomplete or non-compliant run sequences are identified and their impact on data quality are discussed in the narrative.

QC Outlier – Results exceeding the evaluation criteria are reviewed for compliance with project requirements and a minimum of ten percent of the non-compliant QC values reported electronically are verified for consistency with hard-copy values.

Qualified Results – Qualified results are evaluated for compliance with project requirements and ten percent of qualified results are verified for consistency with the QC Outlier Report.

Field Duplicate – Field duplicate comparison results are evaluated for compliance with project requirements and ten percent of values reported are verified for consistency with the hard-copy data.

Rejected Results – All rejected results are evaluated for compliance with project requirements. The reason for rejection of the data is verified against hard copy data.

Analytical deficiencies, project non-compliance issues and inconsistencies with hard copy results observed during ADR evaluation process and their impact on data quality are summarized in the ADR narrative.

Out of control events experienced by the laboratory have warranted the qualification of 0 % (0 results) and the rejection of 0 % (0 results) of the data set. These deficiencies are detailed in the referenced attachments, and discussed in the ADR narrative, where appropriate.

Released by

Date

Reason and Comment Codes

<u>Code</u>	<u>Definition</u>
C1	Diluted Out
C2	Flag Parent Only
C2S	Flag Parent (Soil); Batch (Water)
C3	No Action
C4	No QC Outliers
C5	One or both values <5x RL
C6	Recalculated Value
C7	Material Blanks
C8	Spike Insignificant
C9	No Flags; set to ND by method/cal. blank

Reasons

<u>Code</u>	<u>Definition</u>
A	Serial dilution
B	Calibration Blank - Negative
	Negative Blank
B1	Blank
B2	Calibration Blank
C	Continuing Calibration Verification
	Continuing Calibration Verification RRF
D	BS RPD
	Field Duplicate RPD
D1	Lab Replicate RPD
D2	MS RPD
E	Exceeds LinearCalibration Range
F	Hydrocarbon pattern does not match standard
G	Initial Calibration RRF
	Initial Calibration RSD
H	Test Hold Time
	Prep Hold Time
I	Internal standard
K1	Equip Blank
K2	Field Blank
K3	Trip Blank
L	LCS Recovery
M	MS Recovery
N	Blank - No Action
O	Interference check sample
P	Column RPD
Q	Material Blank
S	Surrogate
T	Receipt Temperature
TI	Tentatively Identified Compound
TR	Trace Level Detect
W	Column breakdown (pesticides)
X	Raised reporting limit
Y	Analyte not confirmed on second column

ADR CASE NARRATIVE

Laboratory ID: SDG# 0501021

Prior to loading and processing data, modifications to the project setup may be requested by the laboratory and/or contractor, and approved by the client. These modifications allow the loading of data that was not in complete agreement with the project guidance document; in some cases, variances to the project document may be in process, in others, the changes are required to accept data that had not been generated in compliance with the project guidance document. All project setup modifications are listed below:

There were no project setup modifications associated with this sample delivery group.

Chemistry Data Quality

The data submission process incorporates a series of stored procedures designed to identify conditions in electronic data deliverables (EDD) that would affect chemistry data quality. These conditions will not result in the qualification of the data; however, these findings should be reviewed for possible contractual non-compliance. A brief explanation of each finding encountered for this data set and the potential impact on chemistry data quality is summarized below.

1. Reporting Limit

It was found that all field sample reporting limits (RL) reported by the lab did not meet the project specified RLs required in the project setup.

Data Verification

The data verification process includes a manual review of information on the chains of custody and laboratory case narratives, a check of all rejected results and a minimum of 10 percent of sample and QC results for consistency with hard copy reports, and a cursory review of all reports generated during the automated review process. The following comments are associated with the verification process:

1. Volatile Organics by SW8260

The project setup requires that only CCCs be evaluated for the continuing calibration verification (CV). The laboratory appears to have reported all target analytes for the CV. Only the CCCs were evaluated.

Due to multiple analysis of the parent samples and matrix spike samples, the data flagging system could not be determined either percent recovery or RPD for the matrix spike (MS) and matrix spike duplicate (SD). The data was manually reviewed and all values found to be within project specified acceptance criteria. No further action was necessary.

All of the reports utilized during the data verification process are provided as attachments to this report.

Batch Report

Facility: SWMU 58
 Lab: ECEN
 Filename: 0501021
 Status: Certified - 1/18/2005
 User: RebeccaHumphrey

Test Method: SW8260B
 Prep Method: SW5030
 Leach Method: NONE

Test Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Test Date and Time	Sample Type
LINU50105E	0501054I2r	NA	LABQC	WQ		CCV1093080	1/5/2005 7:21:00PM	CV1
	0501054I2r	NA	LABQC	WQ		LCS1851631	1/5/2005 8:07:00PM	BS1
	0501054I2r	NA	LABQC	WQ		MB1851632	1/5/2005 9:21:00PM	LB1
	0501054I2r	NA	FIELDQC	WQ	PARSTB1	0501021-01	1/5/2005 11:16:00PM	TB1
	0501054I2r	NA	C-41	WG	C-41GW001	0501021-02	1/6/2005 1:23:00AM	N1
	0501054I2r	NA	C-41	WG	C-41FD001	0501021-03	1/6/2005 1:55:00AM	FD1
	0501054I2r	NA	C-41	WG	C-41GW002	0501021-04	1/6/2005 2:27:00AM	N1
	0501054I2r	NA	C-41	WG	C-41GW003	0501021-05	1/6/2005 2:59:00AM	N1
	0501054I2r	NA	C-42	WG	C-42GW001	0501021-06	1/6/2005 3:30:00AM	N1
	0501054I2r	NA	C-42	WG	C-42GW003	0501021-08	1/6/2005 4:02:00AM	N1
	0501054I2r	NA	C-42	WG	C-42GW002	0501021-07	1/6/2005 4:34:00AM	N1
	0501054I2r	NA	C-42	WG	C-42GW002	0501021-07	1/6/2005 5:06:00AM	MS1
	0501054I2r	NA	C-42	WG	C-42GW002	0501021-07	1/6/2005 5:38:00AM	SD1
LINU50107C	0501074I1r	NA	LABQC	WQ		CCV1093081	1/7/2005 6:59:00AM	CV1
	0501074I1r	NA	LABQC	WQ		LCS1851651	1/7/2005 7:31:00AM	BS1
	0501074I1r	NA	LABQC	WQ		MB1851652	1/7/2005 8:34:00AM	LB1
	0501074I1r	NA	C-42	WG	C-42GW001	0501021-06	1/7/2005 1:20:00PM	N1
	0501074I1r	NA	C-42	WG	C-42GW002	0501021-07	1/7/2005 1:52:00PM	N1
	0501074I1r	NA	C-42	WG	C-42GW002	0501021-07	1/7/2005 2:23:00PM	MS1
	0501074I1r	NA	C-42	WG	C-42GW002	0501021-07	1/7/2005 2:55:00PM	SD1
	0501074I1r	NA	C-42	WG	C-42GW003	0501021-08	1/7/2005 3:58:00PM	N1
	0501074I1r	NA	C-43	WG	C-43GW001	0501021-09	1/7/2005 4:30:00PM	N1
	0501074I1r	NA	C-43	WG	C-43GW002	0501021-10	1/7/2005 5:02:00PM	N1
	0501074I1r	NA	C-43	WG	C-43GW003	0501021-11	1/7/2005 5:34:00PM	N1
	0501074I1r	NA	C-44	WG	C-44GW001	0501021-12	1/7/2005 6:06:00PM	N1

Batch Report

Facility: SWMU 58
 Lab: ECEN
 Filename: 0501021
 Status: Certified - 1/18/2005
 User: RebeccaHumphrey

Test Method: SW8260B
 Prep Method: SW5030
 Leach Method: NONE

<u>Test Batch</u>	<u>Prep Batch</u>	<u>Leach Batch</u>	<u>Location</u>	<u>Matrix</u>	<u>Field Sample ID</u>	<u>Lab Sample ID</u>	<u>Test Date and Time</u>	<u>Sample Type</u>
LINU50110C	0501104I1r	NA	LABQC	WQ		CCV1093082	1/10/2005 8:00:00AM	CV1
	0501104I1r	NA	LABQC	WQ		LCS1851661	1/10/2005 8:32:00AM	BS1
	0501104I1r	NA	LABQC	WQ		MB1851661	1/10/2005 10:07:00AM	LB1
	0501104I1r	NA	C-43	WG	C-43GW001	0501021-09	1/10/2005 4:29:00PM	N1
	0501104I1r	NA	C-43	WG	C-43GW002	0501021-10	1/10/2005 5:01:00PM	N1
	0501104I1r	NA	C-43	WG	C-43GW003	0501021-11	1/10/2005 5:32:00PM	N1
LINU50111B	0501114I1r	NA	LABQC	WQ		CCV1093083	1/11/2005 7:16:00AM	CV1
	0501114I1r	NA	LABQC	WQ		LCS1851671	1/11/2005 7:48:00AM	BS1
	0501114I1r	NA	LABQC	WQ		MB1851672	1/11/2005 8:51:00AM	LB1
	0501114I1r	NA	C-44	WG	C-44GW002	0501021-13	1/11/2005 9:55:00AM	N1
	0501114I1r	NA	C-44	WG	C-44GW003	0501021-14	1/11/2005 10:26:00AM	N1

Detected Results

Facility: SWMU 58
 Event: 2004 10 SWMU 58 Vertical Profile Borings
 Reference: ISSS-539-01

SDG: 0501021

Volatile Organic Compounds by Capillary GC/MS

Test/Leach	Matrix	Field Sample ID	Type	Analyte	RL	Lab Result	Qualified Result	Units	Reason
SW8260B/NONE	WG	C-41FD001	FD	Carbon Tetrachloride	1.0	0.25 J	0.25 J	UG/L	TR
SW8260B/NONE	WG	C-41FD001	FD	Trichloroethene (TCE)	1.0	19	19	UG/L	
SW8260B/NONE	WG	C-41GW001	N	Carbon Tetrachloride	1.0	0.23 J	0.23 J	UG/L	TR
SW8260B/NONE	WG	C-41GW001	N	Trichloroethene (TCE)	1.0	19	19	UG/L	
SW8260B/NONE	WG	C-41GW002	N	Carbon Tetrachloride	1.0	0.24 J	0.24 J	UG/L	TR
SW8260B/NONE	WG	C-41GW002	N	Trichloroethene (TCE)	1.0	18	18	UG/L	
SW8260B/NONE	WG	C-41GW003	N	Carbon Tetrachloride	1.0	0.23 J	0.23 J	UG/L	TR
SW8260B/NONE	WG	C-41GW003	N	Trichloroethene (TCE)	1.0	16	16	UG/L	
SW8260B/NONE	WG	C-42GW001	N	1,1,2-Trichloroethane	1.0	0.54 J	0.54 J	UG/L	TR
SW8260B/NONE	WG	C-42GW001	N	1,1-Dichloroethene	1.0	0.20 J	0.20 J	UG/L	TR
SW8260B/NONE	WG	C-42GW001	N	Carbon Tetrachloride	1.0	4.2	4.2	UG/L	
SW8260B/NONE	WG	C-42GW001	N	Chloroform	1.0	0.83 J	0.83 J	UG/L	TR
SW8260B/NONE	WG	C-42GW001	N	Trichloroethene (TCE)	25	900	900	UG/L	
SW8260B/NONE	WG	C-42GW002	N	1,1,2-Trichloroethane	1.0	0.58 J	0.58 J	UG/L	TR
SW8260B/NONE	WG	C-42GW002	N	1,1-Dichloroethene	1.0	0.20 J	0.20 J	UG/L	TR
SW8260B/NONE	WG	C-42GW002	N	Carbon Tetrachloride	1.0	4.9	4.9	UG/L	
SW8260B/NONE	WG	C-42GW002	N	Chloroform	1.0	0.82 J	0.82 J	UG/L	TR
SW8260B/NONE	WG	C-42GW002	N	Tetrachloroethene (PCE)	1.0	0.17 J	0.17 J	UG/L	TR
SW8260B/NONE	WG	C-42GW002	N	Trichloroethene (TCE)	25	1,000	1,000	UG/L	
SW8260B/NONE	WG	C-42GW003	N	1,1,2-Trichloroethane	1.0	0.64 J	0.64 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	1,1-Dichloroethene	1.0	0.21 J	0.21 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	1,2-Dichloropropane	1.0	0.097 J	0.097 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	Carbon Tetrachloride	1.0	4.7	4.7	UG/L	
SW8260B/NONE	WG	C-42GW003	N	Chloroform	1.0	0.83 J	0.83 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	Tetrachloroethene (PCE)	1.0	0.14 J	0.14 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	Trichloroethene (TCE)	25	960	960	UG/L	
SW8260B/NONE	WG	C-43GW001	N	Carbon Tetrachloride	1.0	0.62 J	0.62 J	UG/L	TR

SDG: 0501021

Volatile Organic Compounds by Capillary GC/MS

<u>Test/Leach</u>	<u>Matrix</u>	<u>Field Sample ID</u>	<u>Type</u>	<u>Analyte</u>	<u>RL</u>	<u>Lab Result</u>	<u>Qualified Result</u>	<u>Units</u>	<u>Reason</u>
SW8260B/NONE	WG	C-43GW001	N	Chloroform	1.0	0.13 J	0.13 J	UG/L	TR
SW8260B/NONE	WG	C-43GW001	N	Trichloroethene (TCE)	4.0	120	120	UG/L	
SW8260B/NONE	WG	C-43GW002	N	Carbon Tetrachloride	1.0	0.61 J	0.61 J	UG/L	TR
SW8260B/NONE	WG	C-43GW002	N	Chloroform	1.0	0.15 J	0.15 J	UG/L	TR
SW8260B/NONE	WG	C-43GW002	N	Trichloroethene (TCE)	4.0	130	130	UG/L	
SW8260B/NONE	WG	C-43GW003	N	Carbon Tetrachloride	1.0	0.64 J	0.64 J	UG/L	TR
SW8260B/NONE	WG	C-43GW003	N	Chloroform	1.0	0.14 J	0.14 J	UG/L	TR
SW8260B/NONE	WG	C-43GW003	N	Trichloroethene (TCE)	4.0	120	120	UG/L	
SW8260B/NONE	WG	C-44GW001	N	Carbon Tetrachloride	1.0	31	31	UG/L	
SW8260B/NONE	WG	C-44GW001	N	Chloroform	1.0	0.40 J	0.40 J	UG/L	TR
SW8260B/NONE	WG	C-44GW001	N	Trichloroethene (TCE)	1.0	9.0	9.0	UG/L	
SW8260B/NONE	WG	C-44GW002	N	Carbon Tetrachloride	1.0	30	30	UG/L	
SW8260B/NONE	WG	C-44GW002	N	Chloroform	1.0	0.38 J	0.38 J	UG/L	TR
SW8260B/NONE	WG	C-44GW002	N	Trichloroethene (TCE)	1.0	8.2	8.2	UG/L	
SW8260B/NONE	WG	C-44GW003	N	Carbon Tetrachloride	1.0	29	29	UG/L	
SW8260B/NONE	WG	C-44GW003	N	Chloroform	1.0	0.39 J	0.39 J	UG/L	TR
SW8260B/NONE	WG	C-44GW003	N	Trichloroethene (TCE)	1.0	8.3	8.3	UG/L	

Qualified Results

Facility: SWMU 58
Event: 2004 10 SWMU 58 Vertical Profile Borings
Reference: ISSS-539-01

SDG: 0501021

Volatile Organic Compounds by Capillary GC/MS

Test/Leach	Matrix	Field Sample ID	Type	Analyte	RL	Lab Result	Qualified Result	Units	Reason
SW8260B/NONE	WG	C-41FD001	FD	Carbon Tetrachloride	1.0	0.25 J	0.25 J	UG/L	TR
SW8260B/NONE	WG	C-41GW001	N	Carbon Tetrachloride	1.0	0.23 J	0.23 J	UG/L	TR
SW8260B/NONE	WG	C-41GW002	N	Carbon Tetrachloride	1.0	0.24 J	0.24 J	UG/L	TR
SW8260B/NONE	WG	C-41GW003	N	Carbon Tetrachloride	1.0	0.23 J	0.23 J	UG/L	TR
SW8260B/NONE	WG	C-42GW001	N	1,1,2-Trichloroethane	1.0	0.54 J	0.54 J	UG/L	TR
SW8260B/NONE	WG	C-42GW001	N	1,1-Dichloroethene	1.0	0.20 J	0.20 J	UG/L	TR
SW8260B/NONE	WG	C-42GW001	N	Chloroform	1.0	0.83 J	0.83 J	UG/L	TR
SW8260B/NONE	WG	C-42GW002	N	1,1,2-Trichloroethane	1.0	0.58 J	0.58 J	UG/L	TR
SW8260B/NONE	WG	C-42GW002	N	1,1-Dichloroethene	1.0	0.20 J	0.20 J	UG/L	TR
SW8260B/NONE	WG	C-42GW002	N	Chloroform	1.0	0.82 J	0.82 J	UG/L	TR
SW8260B/NONE	WG	C-42GW002	N	Tetrachloroethene (PCE)	1.0	0.17 J	0.17 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	1,1,2-Trichloroethane	1.0	0.64 J	0.64 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	1,1-Dichloroethene	1.0	0.21 J	0.21 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	1,2-Dichloropropane	1.0	0.097 J	0.097 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	Chloroform	1.0	0.83 J	0.83 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	Tetrachloroethene (PCE)	1.0	0.14 J	0.14 J	UG/L	TR
SW8260B/NONE	WG	C-43GW001	N	Carbon Tetrachloride	1.0	0.62 J	0.62 J	UG/L	TR
SW8260B/NONE	WG	C-43GW001	N	Chloroform	1.0	0.13 J	0.13 J	UG/L	TR
SW8260B/NONE	WG	C-43GW002	N	Carbon Tetrachloride	1.0	0.61 J	0.61 J	UG/L	TR
SW8260B/NONE	WG	C-43GW002	N	Chloroform	1.0	0.15 J	0.15 J	UG/L	TR
SW8260B/NONE	WG	C-43GW003	N	Carbon Tetrachloride	1.0	0.64 J	0.64 J	UG/L	TR
SW8260B/NONE	WG	C-43GW003	N	Chloroform	1.0	0.14 J	0.14 J	UG/L	TR
SW8260B/NONE	WG	C-44GW001	N	Chloroform	1.0	0.40 J	0.40 J	UG/L	TR
SW8260B/NONE	WG	C-44GW002	N	Chloroform	1.0	0.38 J	0.38 J	UG/L	TR
SW8260B/NONE	WG	C-44GW003	N	Chloroform	1.0	0.39 J	0.39 J	UG/L	TR

DATA MANAGEMENT NARRATIVE

Laboratory ID: 0501021

Data Submission

The data submission process incorporates a series of stored procedures designed to identify valid value (VVL), logical (LE), and project specific errors (PSE) in electronic data deliverables (EDD). Automated data review (ADR) is most efficient when data generators correct all errors. Dependent primarily upon the electronic reporting capabilities of the data generator, the severity of the logical and project specific errors listed below have been reduced to warnings. A warning log is generated with each data submission and is presented as an attachment to this report. A brief explanation of each error encountered for this data set and the potential impact on data quality is summarized below.

1. Project Specific Error (PSE) spPSE01L_Invalid_Units_QC

This PSE occurs when laboratory quality control samples are reported with units of percent as opposed to true values. This inconsistency does not affect data quality, unless the submittal is scheduled for delivery to the AFCEE in accordance with the ERPIMS 4.0 specification. Automated data review can be performed for laboratory QC when units are reported in percent or in concentration units. However, to avoid this warning on future submittals, the laboratory would need to report these values in units of concentration (i.e., ug/L).

2. Logical Error (LE) spLE01_QAPPFLAGS_F

This LE warning occurs when there are positive results less than the RL and associated QAPPFLAGS are not "F". This requirement is only necessary if the project is an AFCEE project or if the data is to be submitted to ERPIMS. To avoid this warning in the future, apply QAPPFLAGS of "F" whenever the detected result is less than the RL.

A detailed description of the stored procedures utilized during the data submission process is provided as an attachment to this report (Submission Warnings).

Submission Warnings

Facility: SWMU 58
Data Generator: ECEN
File Name: W:\2005\0501021\0501021.LB1

PSE

<u>Query Name</u>	<u>Finding</u>	<u>Record Count</u>
spPSE01L_Invalid_Units_QC	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is TB/STD; UNITS is PERCENT	3
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is CV/STD; UNITS is PERCENT	12
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is N/STD; UNITS is PERCENT	36
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is BS/ORG; UNITS is PERCENT	16
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is MS/STD; UNITS is PERCENT	3
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is SD/ORG; UNITS is PERCENT	4
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is SD/STD; UNITS is PERCENT	3
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is LB/STD; UNITS is PERCENT	12
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is BS/STD; UNITS is PERCENT	12
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is FD/STD; UNITS is PERCENT	3
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is MS/ORG; UNITS is PERCENT	4
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is CV/ORG; UNITS is PERCENT	84

VVL

<u>Query Name</u>	<u>Finding</u>	<u>Record Count</u>
spLE01_QAPPFLAGS_F	PARVQ is TR; PARVAL is 0.4020; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.6420; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.1650; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2370; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.6350; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.6240; RL is 1.0000; QAPPFLAGS is J	1

Submission Warnings

Facility: SWMU 58
Data Generator: ECEN
File Name: W:\2005\0501021\0501021.LB1

VVL

<u>Query Name</u>	<u>Finding</u>	<u>Record Count</u>
spLE01_QAPPFLAGS_F	PARVQ is TR; PARVAL is 0.2010; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.6060; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2030; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.5770; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.1420; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.8290; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.5440; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2510; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.1450; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.3770; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2140; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.8260; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.8150; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.1350; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2310; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.1300; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.0970; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.3870; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2290; RL is 1.0000; QAPPFLAGS is J	1

Submission Warnings

Facility: SWMU 58
Data Generator: ECEN
File Name: W:\2005\0501021\0501021.LB1

Total Record Count:	570
Error Count:	0
Warning Count:	217

APPENDIX G



406 West South Jordan Parkway, Suite 300 • South Jordan, Utah 84095 • (801) 572-5999 • Fax (801) 572-9069

Memorandum

To: Dean Reynolds, TEAD; Larry McFarland, TEAD
Copy: Maryellen Mackenzie, USACE; Carl Cole, USACE; Doug Mackenzie, USACE; Richard Jirik, Parsons
From: Jan Barbas, Parsons; Jeff Bigelow, Parsons
Date: Wednesday, December 08, 2004
Subject: TEAD SWMU-58 RFI - Waste Management

This letter is to recommend disposition of the 5 drums summarized in Table One, attached. The waste was generated in association with the drilling of well C-41. *EC-42F*

5 drums of saturated soil cutting waste were generated and one sample was taken, labeled IDW18. IDW18 was analyzed for TCLP VOCs. Analysis was conducted by Ecology and Environment, Inc, Lancaster NY, a Utah Certified laboratory.

Results have been received as data packages and electronic data deliverables. Parsons has reviewed the data and found QC to be acceptable. Analytical results and case narrative are attached in portable document format.

Listed Wastes Analysis:

No constituents were detected. Therefore no listed waste codes should be applied.

Characteristic Wastes Analysis:

The waste is known to be primarily soil. Therefore generator's reasonable knowledge may be used to exclude the characteristics of ignitability, reactivity and corrosivity.

No constituents were detected. Therefore no characteristic waste codes (40 CFR Part 261.24) should be applied.

Disposition:

Parsons recommends that this waste be returned to the site for disposal on the ground surface.

Parsons will arrange to dispose of the waste per your written instructions.



Table One

[illegible][illegible][illegible][illegible][illegible]

From: McFarland, Larry [larry.mcfarland@us.army.mil]
Sent: Monday, December 13, 2004 1:51 PM
To: Barbas, Jan
Cc: Reynolds, Dean (Environmental)
Subject: FW: TEAD IRW Management - Waste Disposal Recommendations
Jan,

The TEAD Environmental Office has reviewed the attached analytical provided for cutting generated during the installation vapor profile boring, 1610-VPB001. TEAD concurs with Parsons recommendation that the soil cutting are non-hazardous, but would question the recommendation to spread them back on the ground at the boring location. Is VPB001 located in the concrete apron adjacent to building 615? If so, the cuttings can not be spread at the boring site. If this is the case, please let TEAD know where you propose spreading the cuttings.

The memorandum provided with the second set of analytical, (idw18.pdf) states that the drums analyzed were generated at monitoring well C-41. The table provided with the memorandum and analytical indicate that the drums were generated at C-42. Please provide clarification as to which site they were generated at. In either case, TEAD concurs with Parsons recommendation that the soil cutting are non-hazardous. Please provide clarification as to which site the cuttings will be returned to.

Thanks
Larry McFarland

-----Original Message-----

From: Barbas, Jan [mailto:Jan.Barbas@parsons.com]
Sent: Thursday, December 09, 2004 9:17 AM
To: Bigelow, Jeff; colec@emh2.tooele.army.mil; reynoldd@emh2.tooele.army.mil;
doug.d.mackenzie@usace.army.mil; Jirik, Richard; mcfarlal@emh2.tooele.army.mil;
Maryellen.Mackenzie@usace.army.mil
Subject: TEAD IRW Management - Waste Disposal Recommendations

Hi,

Attached please find two new waste disposal recommendations.

On 12/3 we sent a disposal memo for most of the drums of soil from C-41 and have not had a response.

As always please feel free to contact me if there are questions or comments.

Jan Barbas

Project Chemist

parsons

406 W. South Jordan Parkway, Suite 300

Salt Lake City, Utah 84095

(801) 572-5999 Voice

(801) 572-9069 FAX

jan.barbas@parsons.com

www.parsons.com



analytical services center

International Specialists in Environmental Analysis

4493 Walden Avenue, Lancaster, New York 14086

Tel: 716/685-8080, 800/327-6534 • Fax: 716/685-0852 • Email: asc@ene.com



December 07, 2004

Jan Barbas
Parsons Engineering Science, Inc.
406 W. South Jordan Pkwy.
Suite 300
South Jordan, Utah 840953944

RE: Tooele RCRA Phase II

Work Order No.: **0411222**

Dear Jan Barbas,

Analytical Services Center received 1 sample on Tuesday, November 16, 2004 for the analyses presented in the following report.

The ASC certifies that the test results in this report meet all requirements of NELAC for which it holds certification except as noted in this narrative and/or as flagged in the report.

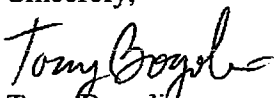
The ASC is accredited in the Fields of Testing Potable water (SDWA), Solid and Chemical Materials (Solid Hazardous Wastes, RCRA), Water (CWA and other non-potable water) and Air and Emissions. Its primary accrediting authorities are New York State Department of Health and Florida Department of Health. The particular analytes/methods certified may be ascertained by requesting the laboratory's current certificates from your laboratory Project Manager .

You will receive an invoice under separate cover.

E & E will retain the samples addressed in this report for 30 days, unless otherwise instructed by the client. If additional storage is requested, the storage fee is \$1.00 per sample container per month, to accrue until the client authorizes sample destruction.

This report is not to be reproduced, except in full, without the written approval of the laboratory.

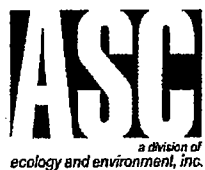
Sincerely,


Tony Bogolin

Project Manager

CC:

Enclosures as noted



Analytical Services Center
International Specialists in Environmental Analysis
Lancaster, New York 14086-
Phone: (716) 685-8080 Fax: (716) 685-0852

Laboratory Results

NYS ELAP ID#: 10486

CLIENT: Parsons Engineering Science, Inc.

Project: Tooele RCRA Phase II

Lab Order: 0411222

Date Received: 11/16/2004

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Alt. Client Id	Collection Date
0411222-01A	IDW18		11/15/2004 8:15:00 AM



Analytical Services Center

International Specialists in Environmental Analysis

4493 Walden Avenue

Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: PARSONS ENGINEERING SCIENCE, INC.

Project: Tooele RCRA Phase II

Lab Order: 0411222

CASE NARRATIVE

GCMS VOLATILES

A DB 624 column and a trap packed with OV-1, Tenax, silica gel and activated charcoal was used for the volatile analysis.

TCLP analysis

All samples were analyzed within hold time.

Calibration and Tunes

All initial and continuing calibrations were acceptable.

There were no manual integrations required.

QC

All surrogate recoveries were within acceptable limits.

All blank analyses were acceptable.

All laboratory control sample/duplicate (LCS/LCSD) recoveries and RPD values were acceptable.

All internal standard area responses were acceptable.

Tony Bogolin

Project Manager

December 7, 2004



Analytical Services Center

International Specialists in Environmental Analysis

Lancaster, New York 14086-

Phone: (716) 685-8080 Fax: (716) 685-0852

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Order: 0411222
Client: Parsons Engineering Science, Inc.
Project: Tooele RCRA Phase II

DATES SUMMARY REPORT

B) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID	Type	DF	#Analytes	F
222-01A IDW18	Soll	TCLP Ext for VOCs by M 1311	11/15/2004 8:15:00 AM	11/16/2004 9:05:00 AM	14:C 11/29/2004 8:15:00 AM	11/23/2004 9:00:43 AM 200404561	NA	NA	NA	[
		TCLP Volatile Organic Compounds by Method 8260B			14:T 12/8/2004 12:07:22 PM	12/1/2004 11:42:00 PM 1073390	SAMP	10	10	[

From: C-Collection / R- Receipt(VTSR) / P-Prep / T-TCLP Prep

"Analyzed" reflects the analysis date and time or injection time for analytical tests. For preparation tests "Analyzed" reflects the start of the preparation except when "AFCEE criteria used"; flag indicates date of completion of the preparation.

TCLP/SPLP Extractions and subsequent preparation tests..."Analyzed" reflects the date of TCLP/SPLP Extraction/preparation. For Re-extracted (RE) samples: Preparation tests completed dates reflects extraction from the original sample leachate unless an "RE" Sample exists for the extraction (tumble) test.



Analytical Services Center
International Specialists in Environmental Analysis
Lancaster, New York 14086-
Phone: (716) 685-8080 Fax: (716) 685-0852

Laboratory Results

NYS ELAP ID#: 10486

Client: Parsons Engineering Science, Inc.
Project: Tooele RCRA Phase II
Work Order: 0411222

Method References

GCMS Volatiles

TCLP VOCs by Method 8260B

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. 3rd ed. 1986. Volumes.1A, 1B, 1C & Volume 2. (Includes all Updates). U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response.

SAMPLE RECEIPT RECORDS

CHAIN OF CUSTODY

PARSONS

COC ID: 911

Project Name: Tooele Industrial Area

Contractor: Parsons - SLC

Parsons Point of Contact: Jan Barbas
406 W. South Jordan Parkway

Project Manager: Ed Staes

Installation: TEAD

Suite 300
South Jordan, Utah 84095

Sample Coordinator: Jeff Bigelow

Sample Program: Shallow Soil Sampling

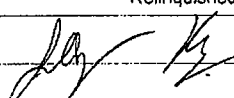
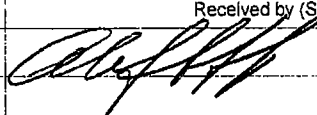
(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
	IDW18	IDW18	SD	B	N	1	11-15-04	08:15	JTB			2
Analysis		Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
TCLPVOC		ECEN	6	2								

Ibw sample for containers

PARSIV2043601-05

Well C-42

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
	11-15-04 18:00		11-16-04 0905



Cooler Receipt Form

No. of Packages:	1	Date Received:	11-16-04
Package Receipt No.:	14996	Project or Site Name:	Toole
Client:	Fumons		

A. Preliminary Examination and Receipt Phase		Circle One		
1. Did coolers come with airbill or packing slip?		Yes	No	NA
Circle carrier here and print airbill number below: <u>Fed Ex</u> Airborne Client Other _____				
Shipped as high hazard or dangerous goods?		Yes	No	NA
2. Did cooler(s) have custody seals?		Yes	No	NA
3. Were custody seals unbroken and intact on receipt?		Yes	No	NA
4. Were custody seals dated and signed?		Yes	No	NA
5. How was package secured?	<input type="checkbox"/> Not secured <input checked="" type="checkbox"/> Fiberglass Tape <input type="checkbox"/> _____			

B. Unpacking Phase					
6. Date cooler(s) opened: <u>11-16-04</u>	Cooler(s) opened by: <u>[Signature]</u>				
7. Was a temperature blank vial included inside cooler(s)?	Yes No NA				
Please Record Temperature Vial or Cooler Temperature for Each Cooler, Range (2° - 6°C)*					
Airbill No.	Temp. °C	Airbill No.	Temp. °C	Airbill No.	Temp. °C
8457 2785 3970	6°C				
Thermometer No.: <u>231</u>	Correction Factor: <u>0.0</u>	*If temperature is outside of acceptable range, prepare a PM Notification form indicating affected containers.			
8. Were the C-O-C forms received?		Yes	No	NA	
C-O-C forms numbers if present: <u>911</u>					
9. Was enough packing material used in cooler(s)?		Yes	No	NA	
Type of material: <input type="checkbox"/> Vermiculite <input checked="" type="checkbox"/> Bubble Wrap <input type="checkbox"/> Other _____					
10. If cooling was required, what was the means (type ice) of cooling used: <input checked="" type="checkbox"/> Wet <input type="checkbox"/> Dry <input type="checkbox"/> Blue <input type="checkbox"/> Other				NA	
11. Were all containers sealed in separate plastic bags?		Yes	No	NA	
12. Did all containers arrive unbroken and in good condition?		Yes	No	NA	
13. Interim storage area if not logged: _____					
In: Date _____ Time _____	Signature _____				
Out: Date _____ Time _____	Signature _____				

C. Login Phase	
Samples Logged in By Signature: <u>D Skolman</u>	Date: <u>11-16-04</u>
14. Were all container labels complete (e.g. date, time preserved)?	Yes No NA
15. Were all C-O-C forms filled out properly in black ink and signed?	Yes No NA
16. Did the C-O-C form agree with containers received?	Yes No NA
17. Were the correct containers used for the tests requested?	Yes No NA
18. Were the correct preservatives listed on the sample labels?	Yes No NA
19. Was a sufficient sample volume sent for the tests requested?	Yes No NA
20. Were all volatile samples received without headspace?	Yes No NA

RESULTS SUMMARY

**Analytical Services Center**

International Specialists in Environmental Analysis

4493 Walden Avenue

Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.**Client Sample ID:** IDW18**Lab Order:** 0411222**Alt. Client ID:****Project:** Tooele RCRA Phase II**Collection Date:** 11/15/2004 8:15:00 A % Moist:**Lab ID:** 0411222-01A**Sample Type:** SAMP**Matrix:** Soil**Test Code:** 1_1311_8260B_L**TCLP VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B****Method:** SW8260B**Prep Method:** SW1311

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1-Dichloroethene	ND		0.0500	mg/L	10	12/1/2004 11:42:00 PM	ROBERT_041201D	GP
1,2-Dichloroethane	ND		0.0500	mg/L	10			
2-Butanone	ND		0.100	mg/L	10			
Benzene	ND		0.0500	mg/L	10			
Carbon tetrachloride	ND		0.0500	mg/L	10			
Chlorobenzene	ND		0.0500	mg/L	10			
Chloroform	ND		0.0500	mg/L	10			
Tetrachloroethene	ND		0.0500	mg/L	10			
Trichloroethene	ND		0.0500	mg/L	10			
Vinyl chloride	ND		0.100	mg/L	10			
Surr:1,2-Dichloroethane-d4	96		82 - 124	%REC	10	12/1/2004 11:42:00 PM	ROBERT_041201D	GP
Surr:4-Bromofluorobenzene	100		87 - 115	%REC	10			
Surr:Toluene-d8	103		85 - 115	%REC	10			

Definitions:

* - Recovery outside QC limits

DF - Dilution Factor

H - Value Exceeds Maximum Contaminant Level

N - Single Column Analysis

NP - Petroleum Pattern is not present

B - Analyte found in Method blank

DNI - Did not Ignite

J - Estimated value

NC - Not Calculated

P - Post Spike Recovery outside limits

D - Diluted due to matrix or extended target compounds

E - Result above quantitation limit (high standard or ICP linear range).

M - Matrix Spike Recovery outside limits

ND - Not Detected at the Reporting Limit

R - RPD outside recovery limits

APPENDIX H



406 West South Jordan Parkway, Suite 300 • South Jordan, Utah 84095 • (801) 572-5999 • Fax (801) 572-9069

Memorandum

To: Dean Reynolds, TEAD; Larry McFarland, TEAD
Copy: Maryellen Mackenzie, USACE; Carl Cole, USACE; Doug Mackenzie, USACE; Richard Jirik, Parsons
From: Jan Barbas, Parsons
Date: Thursday, December 23, 2004
Subject: TEAD SWMU-58 RFI - Waste Management

This letter is to recommend disposition of the contents of the 6500 gallon Baker Tank summarized in Table One, attached.

One sample of the contents was taken, labeled IDW21. IDW21 was analyzed for total VOCs. Analysis was conducted by Ecology and Environment, Inc, Lancaster NY, a Utah Certified laboratory.

Results have been received as data packages and electronic data deliverables. Parsons has reviewed the data and found QC to be acceptable. Analytical results and case narrative are attached in portable document format.

Listed Wastes Analysis:

Trichloroethene at 155 µg/L, tetrachloroethene at 1.09 µg/L, chloroform at 0.167 µg/L, and carbon tetrachloride at 0.761 µg/L were detected in IDW21. Therefore it is recommended that the waste be coded as F001 and F002 hazardous.

Characteristic Wastes Analysis:

The waste is known to be primarily water. Therefore generator's reasonable knowledge may be used to exclude the characteristics of ignitability, reactivity and corrosivity.

No constituents were detected in excess of TCLP limits. Therefore no characteristic waste codes (40 CFR Part 261.24) should be applied.

Disposition:

Parsons recommends that this waste be disposed of in TEAD's treatment facility.

Parsons will arrange to dispose of the waste per your written instructions.

From: McFarland, Larry [mailto:larry.mcfarland@us.army.mil]

Sent: Tuesday, January 04, 2005 2:54 PM

To: Kubacki, Steve

Cc: Jirik, Richard

Subject: Processing SWMU 58 Well Development Water

Steve,

As we discussed on the phone earlier, Tooele Army Depot has determined that the well development water generated during the SWMU 58 investigation, that is stored in the 6500 gallon Baker tanks in Parsons 90 day yard, can be processed through the ground water treatment plant. Constituent detected in the water include Trichloroethene at 155 µg/L, tetrachloroethene at 1.09 µg/L, chloroform at 0.167 µg/L, and carbon tetrachloride at 0.761 µg/L, all of which we are permitted for treatment through the system. Attached for your reference is a copy of the analytical report for samples collected from the tank. Parsons would like to transfer the water to the treatment plant on January 5th. Richard Jirik will contact you to coordinate the transfer.

Thanks

Larry McFarland

Environmental Office, SJMTE-CS-EO

1 Tooele Army Depot, Building 8

Tooele, Utah 84074-5003

Phone (435) 833-3235 Fax (435) 833-2839

larry.mcfarland@us.army.mil

mcfarlal@emh2.tooele.army.mil

Table One

[illegible]



analytical services center

International Specialists in Environmental Analysis

4493 Walden Avenue, Lancaster, New York 14086

Tel: 716/685-8080, 800/327-6534 • Fax: 716/685-0852 • Email: asc@ene.com



December 21, 2004

Jan Barbas
Parsons Engineering Science, Inc.
406 W. South Jordan Pkwy.
Suite 300
South Jordan, Utah 840953944

RE: Tooele RCRA Phase II

Work Order No.: **0412033**

Dear Jan Barbas,

Analytical Services Center received 2 samples on Thursday, December 02, 2004 for the analyses presented in the following report.

The ASC certifies that the test results in this report meet all requirements of NELAC for which it holds certification except as noted in this narrative and/or as flagged in the report.

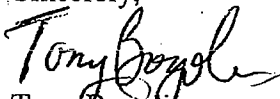
The ASC is accredited in the Fields of Testing Potable water (SDWA), Solid and Chemical Materials (Solid Hazardous Wastes, RCRA), Water (CWA and other non-potable water) and Air and Emissions. Its primary accrediting authorities are New York State Department of Health and Florida Department of Health. The particular analytes/methods certified may be ascertained by requesting the laboratory's current certificates from your laboratory Project Manager.

You will receive an invoice under separate cover.

E & E will retain the samples addressed in this report for 30 days, unless otherwise instructed by the client. If additional storage is requested, the storage fee is \$1.00 per sample container per month, to accrue until the client authorizes sample destruction.

This report is not to be reproduced, except in full, without the written approval of the laboratory.

Sincerely,


Tony Bogolin

Project Manager

CC:

Enclosures as noted



Analytical Services Center
International Specialists in Environmental Analysis
Lancaster, New York 14086-
Phone: (716) 685-8080 Fax: (716) 685-0852

Laboratory Results

NYS ELAP ID#: 10486

CLIENT: Parsons Engineering Science, Inc.
Project: Tooele RCRA Phase II
Lab Order: 0412033
Date Received: 12/2/2004

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Alt. Client Id	Collection Date
0412033-01A	IDW21		12/1/2004 8:15:00 AM
0412033-02A	IDWTB5		12/1/2004 8:15:00 AM



Analytical Services Center

International Specialists in Environmental Analysis

4493 Walden Avenue

Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: PARSONS ENGINEERING SCIENCE, INC.

Project: Tooele RCRA Phase II

Lab Order: 0412033

CASE NARRATIVE

Trip Blank (IDWTB5) analysis was cancelled by Jan Barbas on December 3, 2004.

GCMS VOLATILES

A DB 624 column and a trap packed with OV-1, Tenax, silica gel and activated charcoal was used for the volatile analysis.

Sample Analysis

All aqueous volatile samples were determined to be at a pH of 1.

All samples were analyzed within hold time.

Sample IDW21 was analyzed at a secondary dilution due to the elevated level of trichloroethene present. Both sets of data have been reported.

Calibration and Tunes

All initial and continuing calibrations were acceptable.

There were no manual integrations required.

QC

All surrogate recoveries were within acceptable limits.

All blank analyses were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

All internal standard area responses were acceptable.

Tony Bogoliti
Project Manager

December 21, 2004



Analytical Services Center

International Specialists in Environmental Analysis

Lancaster, New York 14086-

Phone: (716) 685-8080

Fax: (716) 685-0852

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Order: 0412033

Client: Parsons Engineering Science, Inc.

Project: Tooele RCRA Phase II

DATES SUMMARY REPORT

B) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID	Type	DF	#Analytes	Fl
033-01A	IDW21	Water Low Level VOCs by Method 8260B	12/1/2004 8:15:00 AM	12/2/2004 9:04:00 AM	14:C 12/15/2004 8:15:00 AM	12/8/2004 9:37:00 AM 1080095	SAMP	1	21	[

From: C-Collection / R- Receipt(VTSR) / P-Prep / T-TCLP Prep

"Analyzed" reflects the analysis date and time or injection time for analytical tests. For preparation tests "Analyzed" reflects the start of the preparation except when "AFCEE criteria used"; flag indicates date time of completion of the preparation.

TCLP/SPLP Extractions and subsequent preparation tests..."Analyzed" reflects the date of TCLP/SPLP Extraction/preparation. For Re-extracted (RE) samples: Preparation tests completed dates reflects extraction from the original sample leachate unless an "RE" Sample exists for the extraction (tumble) test.

Version #: 041220_1500

Printed: Tuesday, December 21, 2004 4:03:00 PM



Analytical Services Center
International Specialists in Environmental Analysis
Lancaster, New York 14086-
Phone: (716) 685-8080 Fax: (716) 685-0852

Laboratory Results

NYS ELAP ID#: 10486

Client: Parsons Engineering Science, Inc.
Project: Tooele RCRA Phase II
Work Order: 0412033

Method References

GCMS Volatiles

Parsons, Tooele - VOCs, Low Level by GCMS Method
8260B

Test Methods for Evaluating Solid Waste: Physical/Chemical
Methods. 3rd ed. 1986. Volumes. 1A, 1B, 1C & Volume 2. (Includes
all Updates). U.S. Environmental Protection Agency, Office of Solid
Waste and Emergency Response.

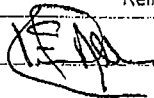
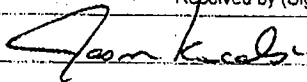
SAMPLE RECEIPT RECORDS

CHAIN OF CUSTODY PARSONS COC ID: 920	Project Name:	Tooele Industrial Area	Contractor:	Parsons - SLC	Parsons Point of Contact: Jan Barbas
	Project Manager:	Ed Staes	Installation:	TEAD	406 W. South Jordan Parkway Suite 300 South Jordan, Utah 84095
	Sample Coordinator:	Jeff Bigelow	Sample Program:	Shallow Soil Sampling	(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
	IDW21	IDW21	WW	B	N	1	12-1-04	08:15	JJB	-	-	3
	Analysis	Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN	12-1-04	3			01120401					

IDW Sample

for container. PAR2SN20430401

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
 Ed Staes	01 DEC 04 / 1000	 Jan Barbas	12/2/04 0804

CHAIN OF CUSTODY

PARSONS

COC ID: 921

Project Name: Tooele Industrial Area Contractor: Parsons - SLC Parsons Point of Contact: Jan Barbas
 Project Manager: Ed Staes Installation: TEAD 406 W. South Jordan Parkway
 Suite 300
 South Jordan, Utah 84095
 Sample Coordinator: Jeff Bigelow Sample Program: Shallow Soil Sampling (801) 572-5999 FAX (801) 572-9069

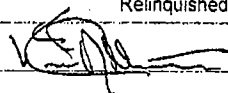
Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
	IDWTB5	IDWTB5	WQ	NA	TB	1	12-1-04	08:15	JTB	-	-	1
Analysis		Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
VOC		ECEN	12-1-04	1								

Relinquished by (Signature)

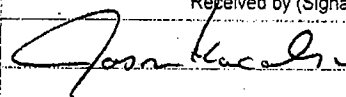
Date/Time

Received by (Signature)

Date/Time

 TO FedEx

01 DEC 04 / 1000



12/2/04 0904



Cooler Receipt Form

No. of Packages:	1	Date Received:	12-2-04
Package Receipt No.:	15125	Project or Site Name:	Tooch
Client:	PERSONS		

A. Preliminary Examination and Receipt Phase		Circle One		
1. Did coolers come with airbill or packing slip?		Yes	No	NA
Circle carrier here and print airbill number below: <u>Fed Ex</u> Airborne Client Other				
Shipped as high hazard or dangerous goods?		Yes	No	NA
2. Did cooler(s) have custody seals?		Yes	No	NA
3. Were custody seals unbroken and intact on receipt?		Yes	No	NA
4. Were custody seals dated and signed?		Yes	No	NA
5. How was package secured?	<input type="checkbox"/> Not secured <input type="checkbox"/> Fiberglass Tape <input checked="" type="checkbox"/> Plastic			

B. Unpacking Phase					
6. Date cooler(s) opened: <u>12-2-04</u>	Cooler(s) opened by: <u>[Signature]</u>				
7. Was a temperature blank vial included inside cooler(s)?	Yes No NA				
Please Record Temperature Vial or Cooler Temperature for Each Cooler, Range (2° - 6°C)*					
Airbill No.	Temp. °C	Airbill No.	Temp. °C	Airbill No.	Temp. °C
7921 4854 4397	2°				
Thermometer No.: <u>231</u>	Correction Factor: <u>0</u>	*If temperature is outside of acceptable range, prepare a PM Notification form indicating affected containers.			
8. Were the C-O-C forms received?		Yes	No	NA	
C-O-C forms numbers if present:					
9. Was enough packing material used in cooler(s)?		Yes	No	NA	
Type of material: <input type="checkbox"/> Vermiculite <input checked="" type="checkbox"/> Bubble Wrap <input type="checkbox"/> Other					
10. If cooling was required, what was the means (type ice) of cooling used:	<input checked="" type="checkbox"/> Wet <input type="checkbox"/> Dry <input type="checkbox"/> Blue <input type="checkbox"/> Other				NA
11. Were all containers sealed in separate plastic bags?		Yes	No	NA	
12. Did all containers arrive unbroken and in good condition?		Yes	No	NA	
13. Interim storage area if not logged:					
In: Date	Time	Signature			
Out: Date	Time	Signature			

C. Login Phase	
Samples Logged in By Signature: <u>D. Skerlinman</u>	Date: <u>12-2-04</u>
14. Were all container labels complete (e.g. date, time preserved)?	Yes No NA
15. Were all C-O-C forms filled out properly in black ink and signed?	Yes No NA
16. Did the C-O-C form agree with containers received?	Yes No NA
17. Were the correct containers used for the tests requested?	Yes No NA
18. Were the correct preservatives listed on the sample labels?	Yes No NA
19. Was a sufficient sample volume sent for the tests requested?	Yes No NA
20. Were all volatile samples received without headspace?	Yes No NA

RESULTS SUMMARY



Analytical Services Center
International Specialists in Environmental Analysis
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc. **Client Sample ID:** IDW21
Lab Order: 0412033 **Alt. Client ID:**
Project: Tooele RCRA Phase II **Collection Date:** 12/1/2004 8:15:00 AM % Moist:
Lab ID: 0412033-01A **Sample Type:** SAMP **Matrix:** Water **Test Code:** C_8260B_5030B_LL_W_018

LOW LEVEL VOCs BY METHOD 8260B **Method:** SW8260B **Prep Method:** SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	12/8/2004 9:37:00 AM	LINUS_041208A	DWW
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	0.761	J	1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	0.167	J	1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	1.09		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	158	E	1.00	µg/L	1			
Vinyl chloride	ND		1.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	101		70 - 130	%REC	1	12/8/2004 9:37:00 AM	LINUS_041208A	DWW
Surr:4-Bromofluorobenzene	92		70 - 130	%REC	1			
Surr:Toluene-d8	95		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits	B - Analyte found in Method blank	D - Diluted due to matrix or extended target compounds
DF - Dilution Factor	DNI - Did not Ignite	E - Result above quantitation limit (high standard or ICP linear range).
H - Value Exceeds Maximum Contaminant Level	J - Estimated value	M - Matrix Spike Recovery outside limits
N - Single Column Analysis	NC - Not Calculated	ND - Not Detected at the Reporting Limit
NP - Petroleum Pattern is not present	P - Post Spike Recovery outside limits	R - RPD outside recovery limits

**Analytical Services Center**

International Specialists in Environmental Analysis

4493 Walden Avenue

Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.

Client Sample ID: IDW21

Lab Order: 0412033

Alt. Client ID:

Project: Tooele RCRA Phase II

Collection Date: 12/1/2004 8:15:00 AM % Moist:

Lab ID: 0412033-01A

Sample Type: DL

Matrix: Water

Test Code: C_8260B_5030B_LL_W_018

LOW LEVEL VOCs BY METHOD 8260B

Method: SW8260B

Prep Method: SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		5.00	µg/L	5	12/8/2004 4:31:00 PM	LINUS_041208A	DWW
1,1,2-Trichloroethane	ND		5.00	µg/L	5			
1,1-Dichloroethane	ND		5.00	µg/L	5			
1,1-Dichloroethene	ND		5.00	µg/L	5			
1,2-Dichloroethane	ND		5.00	µg/L	5			
1,2-Dichloropropane	ND		5.00	µg/L	5			
Benzene	ND		5.00	µg/L	5			
Carbon tetrachloride	0.750	J	5.00	µg/L	5			
Chloroethane	ND		5.00	µg/L	5			
Chloroform	ND		5.00	µg/L	5			
cis-1,2-Dichloroethene	ND		5.00	µg/L	5			
Ethylbenzene	ND		5.00	µg/L	5			
m,p-Xylene	ND		5.00	µg/L	5			
Methylene chloride	ND		10.0	µg/L	5			
Naphthalene	ND		5.00	µg/L	5			
o-Xylene	ND		5.00	µg/L	5			
Tetrachloroethene	0.995	J	5.00	µg/L	5			
Toluene	ND		5.00	µg/L	5			
trans-1,2-Dichloroethene	ND		5.00	µg/L	5			
Trichloroethene	155		5.00	µg/L	5			
Vinyl chloride	ND		5.00	µg/L	5			
Surr:1,2-Dichloroethane-d4	102		70 - 130	%REC	5	12/8/2004 4:31:00 PM	LINUS_041208A	DWW
Surr:4-Bromofluorobenzene	95		70 - 130	%REC	5			
Surr:Toluene-d8	94		70 - 130	%REC	5			

Definitions:

* - Recovery outside QC limits

DF - Dilution Factor

H - Value Exceeds Maximum Contaminant Level

N - Single Column Analysis

NP - Petroleum Pattern is not present

B - Analyte found in Method blank

DNI - Did not Ignite

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